Oilfield Environmental & Compliance, Inc.

Chad Walker
Vaquero - Hermosa Rd, Bakersfield
4700 Stockdale HWY, Suite120
Bakersfield, CA 93309

Report: July 27, 2017 17:41 Work Order: 1702142, 1702159

Project: Ardantz Lease
Number: Ardantz # 506 / API # 08322869

Dear Client:

Enclosed is an analytical report for the above referenced project. The samples included in this report were received on June 16, 2017 14:42 to June 18, 2017 10:50 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Meredith Sprister, Project Manager
msprister@oecusa.com

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Chad Walker	07/27/2017 17:41

SAMPLE SUMMARY

Sample ID	Laboratory ID	Client Matrix	Lab Matrix	Date Sampled	Date Received
Ardantz # 506	1702142-01	Produced Water	Produced Water	06/16/17 13:30	06/16/17 14:42
Ardantz # 506 (from 2- 55 gal drums on site)	1702159-01	Produced Water	Water	06/17/17 08:30	06/18/17 10:50

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

ANALYTICAL REPORT FOR SAMPLES

1702142-01 (Produced Water)

Ardantz # 506

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Wet Chemistry by EPA or APHA Standard Methods									
Total Dissolved Solids	11000	10	mg/L	1	B7F0463	06/17/17	06/17/17	SM 2540C	
Miscellaneous Physical/Conventional Chemistry Parameters									
Specific Conductance (EC) @ 25 C	17500	0.01	uS/cm	1	B7F0622	06/16/17	06/16/17	Martini Instruments Mi306	
pH	6.9	0.01	pH Units	"	"	"	"	LaMotte pH PockeTester	
Total Dissolved Solids (Estimated)	12000	0.01	mg/L	"	"	"	"	Martini Instruments Mi306	
Sample Temperature	31	1.0	°C	"	"	"	"	LaMotte pH PockeTester	
Turbidity	1800	0.03	NTU	3	"	"	"	HACH 2100Q	

1702159-01 (Produced Water)

Ardantz # 506 (from 2- 55 gal drums on site)

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
ACZ									
M900.0									
Gross Alpha	3.6	47	pCi/L	1	WG426130	06/17/17	07/03/17	M900.0	
Gross Beta	240	91	"	"	"	"	"	"	
M903.1									
Radium 226	5.7	0.7	pCi/L	1	WG427067	"	07/18/17	M903.1	D1
M904.0									
Radium 228	2.4	3.1	pCi/L	1	WG427051	"	07/14/17	M904.0	D1
Energy Laboratories									
E905.0									
Strontium 90	1.7	2.4	pCi/L	1	SR900664	07/24/17	07/24/17	E905.0	Ua
E906.0									
Tritium	4420	436	pCi/L	1	R225223	07/20/17	07/20/17	E906.0	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

1702159-01 (Produced Water)

Ardantz # 506 (from 2- 55 gal drums on site)

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Oilfield Environmental & Compliance, Inc.									
Wet Chemistry by EPA or APHA Standard Methods									
Total Alkalinity	**1400**	10	mg/L	1	B7F0586	06/21/17	06/21/17	SM 2320B	
Anions by EPA Method 300.0									
Bromide	**33**	4.0	mg/L	10	B7F0470	06/18/17	06/18/17	EPA 300.0	
Chloride	**5500**	200	"	500	"	"	06/18/17	"	
Nitrate as N	ND	4.0	"	10	"	"	06/18/17	"	R-06
Sulfate	**100**	4.0	"	"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods									
Aluminum	ND	0.20	mg/L	1	B7F0597	06/22/17	06/22/17	EPA 6010B	
Antimony	ND	0.050	"	"	"	"	"	"	
Arsenic	ND	0.040	"	"	"	"	"	"	
Barium	**0.86**	0.010	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Boron	**38**	0.10	"	"	"	"	"	"	
Cadmium	ND	0.0050	"	"	"	"	"	"	
Calcium	**120**	0.10	"	"	"	"	"	"	
Chromium	ND	0.010	"	"	"	"	"	"	
Cobalt	ND	0.010	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Iron	**0.26**	0.050	"	"	"	"	"	"	
Lead	ND	0.010	"	"	"	"	"	"	
Lithium	**3.2**	0.025	"	"	"	"	"	"	
Magnesium	**100**	0.050	"	"	"	"	"	"	
Manganese	**0.10**	0.010	"	"	"	"	"	"	
Molybdenum	ND	0.0050	"	"	"	"	"	"	
Nickel	ND	0.010	"	"	"	"	"	"	
Potassium	**180**	0.50	"	"	"	"	"	"	
Selenium	**0.091**	0.050	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Sodium	**3400**	50	"	100	"	"	06/23/17	"	
Strontium	**2.9**	0.010	"	1	"	"	06/22/17	"	
Thallium	ND	0.020	"	"	"	"	"	"	
Vanadium	ND	0.050	"	"	"	"	"	"	
Zinc	ND	0.050	"	"	"	"	"	"	
Mercury	ND	0.00020	"	"	B7F0475	06/19/17	06/19/17	EPA 7470A	

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Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

1702159-01 (Produced Water)

Ardantz # 506 (from 2- 55 gal drums on site)

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TEPH by GC FID									
TPH Oil Crude (C8-C40)	**82**	5.2	mg/L	50	B7F0491	06/19/17	06/20/17	EPA 8015M	
Surrogate: o-Terphenyl		*128 %*	*(46 - 168)*		"	"	"	"	
Volatile Organic Compounds by EPA Method 8260B									
Benzene	**2500**	100	ug/L	200	B7F0607	06/23/17	06/23/17	EPA 8260B	**N-05**
Ethylbenzene	**360**	10	"	20	B7F0579	06/21/17	06/21/17	"	
Toluene	**1600**	100	"	200	B7F0607	06/23/17	06/23/17	"	
Xylenes (total)	**1000**	10	"	20	B7F0579	06/21/17	06/21/17	"	
Surrogate: Dibromofluoromethane		*97.8 %*	*(84 - 126)*		"	"	"	"	
Surrogate: Toluene-d8		*85.3 %*	*(64 - 130)*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*(66 - 123)*		"	"	"	"	
Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring									**R-05**
Acenaphthene	**1.5**	0.52	ug/L	5	B7F0568	06/21/17	06/23/17	EPA 8270M SIM	
Acenaphthylene	ND	0.52	"	"	"	"	"	"	
Anthracene	ND	0.52	"	"	"	"	"	"	
Benz (a) anthracene	ND	0.52	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.52	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.52	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.52	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	0.52	"	"	"	"	"	"	
Chrysene	**0.52**	0.52	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.52	"	"	"	"	"	"	
Fluoranthene	ND	0.52	"	"	"	"	"	"	
Fluorene	**3.8**	0.52	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.52	"	"	"	"	"	"	
Naphthalene	**56**	2.1	"	20	"	"	06/23/17	"	
Phenanthrene	**6.2**	0.52	"	5	"	"	06/23/17	"	
Pyrene	ND	0.52	"	"	"	"	"	"	
Surrogate: p-Terphenyl-d14		*162 %*	*(38 - 195)*		"	"	"	"	

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1702159-01 (Produced Water)

Ardantz # 506 (from 2- 55 gal drums on site)

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Dissolved Gases by RSK 175									
Carbon Dioxide	**5.22**	0.100	mg/L	1	B7F0703	06/26/17	06/26/17	RSK 175	
Methane	**4.92**	0.100	"	"	"	"	"	"	
Metals by EPA 200 Series Methods									
Uranium	ND	0.0010	mg/L	1	B7F0542	06/20/17	06/26/17	EPA 200.8	

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Wet Chemistry by EPA or APHA Standard Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0463 - SM 2540C Preparation: 2540 C TDS Prep 06/17/17 15:21										
Blank (B7F0463-BLK1)				Analyzed: 06/17/17 17:30						
Total Dissolved Solids	ND	10	mg/L							
LCS (B7F0463-BS1)				Analyzed: 06/17/17 17:30						
Total Dissolved Solids	1000	10	mg/L	1000		104	75-125			
LCS Dup (B7F0463-BSD1)				Analyzed: 06/17/17 17:30						
Total Dissolved Solids	1000	10	mg/L	1000		104	75-125	0.00	10	
Duplicate (B7F0463-DUP1) **Source: 1702142-01**				Analyzed: 06/17/17 17:30						
Total Dissolved Solids	11000	10	mg/L		11000			0.537	10	
Batch B7F0586 - SM 2320B Preparation: EPA 2320B Alkalinity Prep 06/21/17 12:22										
Blank (B7F0586-BLK1)				Analyzed: 06/21/17 15:41						
Total Alkalinity	ND	10	mg/L							
LCS (B7F0586-BS1)				Analyzed: 06/21/17 15:41						
Total Alkalinity	2340	10	mg/L	2500		93.6	80-120			
Duplicate (B7F0586-DUP1) **Source: 1702109-01**				Analyzed: 06/21/17 15:41						
Total Alkalinity	359	10	mg/L		360			0.278	20	

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Anions by EPA Method 300.0 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0470 - EPA 300.0 Preparation: EPA 300.0/300.1 Anions Prep 06/18/17 12:56										
Blank (B7F0470-BLK1)			Analyzed: 06/18/17 14:22							
Bromide	ND	0.40	mg/L							
Chloride	ND	0.40	"							
Nitrate as N	ND	0.40	"							
Sulfate	ND	0.40	"							
LCS (B7F0470-BS1)			Analyzed: 06/18/17 13:51							
Bromide	5.06	0.40	mg/L	5.00		101	90-110			
Chloride	5.01	0.40	"	5.00		100	90-110			
Nitrate as N	4.88	0.40	"	5.00		97.7	90-110			
Sulfate	5.05	0.40	"	5.00		101	90-110			
LCS Dup (B7F0470-BSD1)			Analyzed: 06/18/17 14:07							
Bromide	5.05	0.40	mg/L	5.00		101	90-110	0.218	20	
Chloride	5.02	0.40	"	5.00		100	90-110	0.0897	20	
Nitrate as N	4.89	0.40	"	5.00		97.7	90-110	0.0676	20	
Sulfate	5.08	0.40	"	5.00		102	90-110	0.413	20	
Duplicate (B7F0470-DUP1)	**Source: 1702159-01**		Analyzed: 06/18/17 15:41							
Bromide	32.8	4.0	mg/L		32.6			0.563	20	
Nitrate as N	ND	4.0	"		ND				20	
Sulfate	103	4.0	"		103			0.128	20	
Duplicate (B7F0470-DUP2)	**Source: 1702159-01RE1**		Analyzed: 06/18/17 16:44							
Chloride	5500	200	mg/L		5500			0.0382	20	
Matrix Spike (B7F0470-MS1)	**Source: 1702159-01**		Analyzed: 06/18/17 15:57							
Bromide	85.1	4.2	mg/L	52.6	32.6	99.8	80-120			
Nitrate as N	51.8	4.2	"	52.6	ND	98.4	80-120			
Sulfate	153	4.2	"	52.6	103	96.3	80-120			
Matrix Spike (B7F0470-MS2)	**Source: 1702159-01RE1**		Analyzed: 06/18/17 17:00							
Chloride	7370	210	mg/L	2630	5500	71.0	80-120			QM-07

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Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0475 - EPA 7470A Preparation: EPA 7470A Prep 06/19/17 08:21										
Blank (B7F0475-BLK1)				Analyzed: 06/19/17 12:51						
Mercury	ND	0.00020	mg/L							
LCS (B7F0475-BS1)				Analyzed: 06/19/17 12:47						
Mercury	0.0100	0.00020	mg/L	0.0100		100	85-115			
LCS Dup (B7F0475-BSD1)				Analyzed: 06/19/17 12:49						
Mercury	0.00993	0.00020	mg/L	0.0100		99.3	85-115	0.802	20	
Duplicate (B7F0475-DUP1)	**Source: 1702159-01**			Analyzed: 06/19/17 12:55						
Mercury	ND	0.00020	mg/L		ND				20	
Matrix Spike (B7F0475-MS1)	**Source: 1702159-01**			Analyzed: 06/19/17 12:58						
Mercury	0.00504	0.00020	mg/L	0.0100	ND	50.4	75-125			QM-05
Matrix Spike Dup (B7F0475-MSD1)	**Source: 1702159-01**			Analyzed: 06/19/17 13:06						
Mercury	0.00533	0.00020	mg/L	0.0100	ND	53.3	75-125	5.59	20	QM-05
Post Spike (B7F0475-PS1)	**Source: 1702159-01**			Analyzed: 06/19/17 13:08						
Mercury	2.36		ug/L	5.00	0.0239	46.7	85-115			QL-02
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
Blank (B7F0597-BLK1)				Analyzed: 06/22/17 14:27						
Aluminum	ND	0.20	mg/L							
Antimony	ND	0.050	"							
Arsenic	ND	0.040	"							
Barium	ND	0.010	"							
Beryllium	ND	0.010	"							
Boron	ND	0.10	"							
Cadmium	ND	0.0050	"							
Calcium	ND	0.10	"							
Chromium	ND	0.010	"							
Cobalt	ND	0.010	"							
Copper	ND	0.010	"							
Iron	ND	0.050	"							
Lead	ND	0.010	"							
Lithium	ND	0.025	"							
Magnesium	ND	0.050	"							
Manganese	ND	0.010	"							
Molybdenum	ND	0.0050	"							
Nickel	ND	0.010	"							
Potassium	ND	0.50	"							
Selenium	ND	0.050	"							
Silver	ND	0.010	"							
Sodium	ND	0.50	"							

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Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
Blank (B7F0597-BLK1)			Analyzed: 06/22/17 14:27							
Strontium	ND	0.010	mg/L							
Thallium	ND	0.020	"							
Vanadium	ND	0.050	"							
Zinc	ND	0.050	"							
LCS (B7F0597-BS1)			Analyzed: 06/22/17 14:30							
Aluminum	5.86	0.20	mg/L	6.00		97.7	80-120			
Antimony	1.95	0.050	"	2.00		97.3	80-120			
Arsenic	1.97	0.040	"	2.00		98.6	80-120			
Barium	2.04	0.010	"	2.00		102	80-120			
Beryllium	2.03	0.010	"	2.00		101	80-120			
Boron	1.88	0.10	"	2.00		94.2	80-120			
Cadmium	2.04	0.0050	"	2.00		102	80-120			
Calcium	9.92	0.10	"	10.0		99.2	80-120			
Chromium	2.05	0.010	"	2.00		103	80-120			
Cobalt	2.05	0.010	"	2.00		103	80-120			
Copper	2.06	0.010	"	2.00		103	80-120			
Iron	9.98	0.050	"	10.0		99.8	80-120			
Lead	2.07	0.010	"	2.00		103	80-120			
Lithium	2.08	0.025	"	2.00		104	80-120			
Magnesium	10.2	0.050	"	10.0		102	80-120			
Manganese	9.81	0.010	"	10.0		98.1	80-120			
Molybdenum	1.92	0.0050	"	2.00		95.8	80-120			
Nickel	2.06	0.010	"	2.00		103	80-120			
Potassium	9.40	0.50	"	10.0		94.0	80-120			
Selenium	1.97	0.050	"	2.00		98.5	80-120			
Silver	0.0910	0.010	"	0.100		91.0	80-120			
Sodium	10.2	0.50	"	10.0		102	80-120			
Strontium	2.07	0.010	"	2.00		104	80-120			
Thallium	2.08	0.020	"	2.00		104	80-120			
Vanadium	1.99	0.050	"	2.00		99.6	80-120			
Zinc	2.03	0.050	"	2.00		102	80-120			

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Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
LCS Dup (B7F0597-BSD1)			Analyzed: 06/22/17 14:33							
Aluminum	5.74	0.20	mg/L	6.00		95.6	80-120	2.17	20	
Antimony	1.89	0.050	"	2.00		94.5	80-120	2.92	20	
Arsenic	1.92	0.040	"	2.00		95.9	80-120	2.83	20	
Barium	1.97	0.010	"	2.00		98.5	80-120	3.39	20	
Beryllium	1.96	0.010	"	2.00		98.2	80-120	3.21	20	
Boron	1.86	0.10	"	2.00		93.2	80-120	1.07	20	
Cadmium	1.98	0.0050	"	2.00		98.8	80-120	3.43	20	
Calcium	9.67	0.10	"	10.0		96.7	80-120	2.57	20	
Chromium	1.97	0.010	"	2.00		98.7	80-120	3.83	20	
Cobalt	2.00	0.010	"	2.00		99.8	80-120	2.87	20	
Copper	2.00	0.010	"	2.00		100	80-120	2.91	20	
Iron	9.61	0.050	"	10.0		96.1	80-120	3.71	20	
Lead	2.00	0.010	"	2.00		100	80-120	3.05	20	
Lithium	2.02	0.025	"	2.00		101	80-120	2.82	20	
Magnesium	9.99	0.050	"	10.0		99.9	80-120	2.04	20	
Manganese	9.60	0.010	"	10.0		96.0	80-120	2.14	20	
Molybdenum	1.90	0.0050	"	2.00		95.1	80-120	0.786	20	
Nickel	2.00	0.010	"	2.00		99.8	80-120	3.11	20	
Potassium	9.24	0.50	"	10.0		92.4	80-120	1.71	20	
Selenium	1.92	0.050	"	2.00		95.8	80-120	2.73	20	
Silver	0.0877	0.010	"	0.100		87.7	80-120	3.69	20	
Sodium	10.2	0.50	"	10.0		102	80-120	0.196	20	
Strontium	2.01	0.010	"	2.00		100	80-120	3.14	20	
Thallium	2.02	0.020	"	2.00		101	80-120	2.78	20	
Vanadium	1.93	0.050	"	2.00		96.6	80-120	3.06	20	
Zinc	1.97	0.050	"	2.00		98.6	80-120	3.00	20	
Duplicate (B7F0597-DUP1)	**Source: 1702159-01**		Analyzed: 06/22/17 15:04							
Aluminum	ND	0.20	mg/L		ND				20	
Antimony	ND	0.050	"		ND				20	
Arsenic	ND	0.040	"		ND				20	
Barium	0.930	0.010	"		0.863			7.48	20	
Beryllium	ND	0.010	"		ND				20	
Boron	42.8	0.10	"		38.5			10.7	20	
Cadmium	ND	0.0050	"		ND				20	
Calcium	126	0.10	"		116			7.77	20	
Chromium	0.00570	0.010	"		0.00640			11.6	20	
Cobalt	ND	0.010	"		ND				20	
Copper	ND	0.010	"		ND				20	
Iron	0.284	0.050	"		0.258			9.66	20	
Lead	0.00990	0.010	"		0.00830			17.6	20	
Lithium	3.43	0.025	"		3.16			8.04	20	
Magnesium	115	0.050	"		105			9.10	20	

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
Duplicate (B7F0597-DUP1)	**Source: 1702159-01**		Analyzed: 06/22/17 15:04							
Manganese	0.109	0.010	mg/L		0.102			7.13	20	
Molybdenum	ND	0.0050	"		ND				20	
Nickel	ND	0.010	"		ND				20	
Potassium	192	0.50	"		177			7.91	20	
Selenium	0.0846	0.050	"		0.0910			7.29	20	
Silver	ND	0.010	"		ND				20	
Strontium	3.13	0.010	"		2.86			8.94	20	
Thallium	0.0102	0.020	"		ND				20	
Vanadium	ND	0.050	"		ND				20	
Zinc	0.0272	0.050	"		0.0217			22.5	20	QR-04
Duplicate (B7F0597-DUP2)	**Source: 1702159-01**		Analyzed: 06/23/17 14:46							
Sodium	3810	50	mg/L		2340			47.9	20	QM-4X
Matrix Spike (B7F0597-MS1)	**Source: 1702217-01**		Analyzed: 06/22/17 14:43							
Aluminum	5.83	0.20	mg/L	6.00	ND	97.2	75-134			
Antimony	1.93	0.050	"	2.00	ND	96.7	74-132			
Arsenic	2.00	0.040	"	2.00	ND	99.8	58-156			
Barium	2.13	0.010	"	2.00	0.00860	106	75-133			
Beryllium	2.08	0.010	"	2.00	ND	104	85-122			
Boron	2.03	0.10	"	2.00	0.134	94.8	69-135			
Cadmium	2.04	0.0050	"	2.00	ND	102	71-135			
Calcium	11.4	0.10	"	10.0	1.30	101	43-154			
Chromium	2.16	0.010	"	2.00	0.0884	104	84-123			
Cobalt	2.10	0.010	"	2.00	ND	105	84-121			
Copper	2.16	0.010	"	2.00	ND	108	84-123			
Iron	298	0.050	"	10.0	286	126	61-139			
Lead	2.08	0.010	"	2.00	ND	104	64-131			
Lithium	2.20	0.025	"	2.00	ND	110	21-219			
Magnesium	10.4	0.050	"	10.0	0.0315	104	34-159			
Manganese	26.9	0.010	"	10.0	16.7	102	66-137			
Molybdenum	1.95	0.0050	"	2.00	ND	97.7	69-133			
Nickel	2.11	0.010	"	2.00	0.00570	105	84-121			
Potassium	10.2	0.50	"	10.0	0.398	97.6	44-164			
Selenium	1.88	0.050	"	2.00	ND	93.8	60-157			
Silver	0.0921	0.010	"	0.100	ND	92.1	43-161			
Sodium	20.2	0.50	"	10.0	10.3	98.6	13-174			
Strontium	2.13	0.010	"	2.00	0.0198	106	72-134			
Thallium	2.10	0.020	"	2.00	ND	105	51-145			
Vanadium	2.06	0.050	"	2.00	ND	103	87-121			
Zinc	2.14	0.050	"	2.00	0.0367	105	86-129			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
Matrix Spike Dup (B7F0597-MSD1)	**Source: 1702217-01**		Analyzed: 06/22/17 14:40							
Aluminum	5.57	0.20	mg/L	6.00	ND	92.8	75-134	4.60	20	
Antimony	1.85	0.050	"	2.00	ND	92.4	74-132	4.49	20	
Arsenic	1.90	0.040	"	2.00	ND	95.1	58-156	4.82	20	
Barium	2.03	0.010	"	2.00	0.00860	101	75-133	4.85	20	
Beryllium	1.97	0.010	"	2.00	ND	98.6	85-122	5.33	20	
Boron	1.93	0.10	"	2.00	0.134	89.9	69-135	4.90	20	
Cadmium	1.94	0.0050	"	2.00	ND	97.2	71-135	4.72	20	
Calcium	11.0	0.10	"	10.0	1.30	96.5	43-154	4.20	20	
Chromium	2.08	0.010	"	2.00	0.0884	99.4	84-123	4.10	20	
Cobalt	2.00	0.010	"	2.00	ND	100	84-121	5.07	20	
Copper	2.07	0.010	"	2.00	ND	104	84-123	4.34	20	
Iron	296	0.050	"	10.0	286	110	61-139	0.538	20	
Lead	1.99	0.010	"	2.00	ND	99.3	64-131	4.62	20	
Lithium	2.09	0.025	"	2.00	ND	104	21-219	5.31	20	
Magnesium	9.92	0.050	"	10.0	0.0315	98.9	34-159	5.07	20	
Manganese	26.3	0.010	"	10.0	16.7	96.3	66-137	2.29	20	
Molybdenum	1.85	0.0050	"	2.00	ND	92.5	69-133	5.47	20	
Nickel	2.01	0.010	"	2.00	0.00570	100	84-121	4.90	20	
Potassium	9.66	0.50	"	10.0	0.398	92.6	44-164	5.08	20	
Selenium	1.77	0.050	"	2.00	ND	88.4	60-157	5.98	20	
Silver	0.0881	0.010	"	0.100	ND	88.1	43-161	4.44	20	
Sodium	19.6	0.50	"	10.0	10.3	92.7	13-174	2.97	20	
Strontium	2.02	0.010	"	2.00	0.0198	100	72-134	5.29	20	
Thallium	1.99	0.020	"	2.00	ND	99.6	51-145	5.19	20	
Vanadium	1.98	0.050	"	2.00	ND	99.0	87-121	3.96	20	
Zinc	2.04	0.050	"	2.00	0.0367	100	86-129	4.83	20	
Post Spike (B7F0597-PS1)	**Source: 1702159-01**		Analyzed: 06/22/17 14:46							
Aluminum	6.00		mg/L	6.00	0.0189	99.8	75-125			
Antimony	2.00		"	2.00	0.0168	99.2	75-125			
Arsenic	2.16		"	2.00	-0.00381	108	75-125			
Barium	2.90		"	2.00	0.844	103	75-125			
Beryllium	2.01		"	2.00	-0.000196	100	75-125			
Boron	38.4		"	2.00	37.6	36.8	75-125			QL-02
Cadmium	1.95		"	2.00	-0.000391	97.6	75-125			
Calcium	123		"	10.0	114	94.6	75-125			
Chromium	1.99		"	2.00	0.00626	99.2	75-125			
Cobalt	1.91		"	2.00	-0.00372	95.4	75-125			
Copper	1.99		"	2.00	0.000880	99.6	75-125			
Iron	10.2		"	10.0	0.252	99.3	75-125			
Lead	1.84		"	2.00	0.00812	91.7	75-125			
Lithium	5.19		"	2.00	3.09	105	75-125			
Magnesium	111		"	10.0	103	81.1	75-125			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0597 - EPA 6010B Preparation: EPA 3010A 06/22/17 07:54										
Post Spike (B7F0597-PS1)	**Source: 1702159-01**		Analyzed: 06/22/17 14:46							
Manganese	9.88		mg/L	10.0	0.0993	97.8	75-125			
Molybdenum	1.93		"	2.00	-0.000782	96.6	75-125			
Nickel	1.92		"	2.00	-0.00753	96.0	75-125			
Potassium	185		"	10.0	173	114	75-125			
Selenium	2.22		"	2.00	0.0890	107	75-125			
Silver	0.0884		"	0.100	-0.00108	88.4	75-125			
Sodium	2360		"	10.0	2290	755	75-125			QL-02
Strontium	4.79		"	2.00	2.80	99.6	75-125			
Thallium	1.73		"	2.00	0.00753	86.0	75-125			
Vanadium	2.06		"	2.00	0.000587	103	75-125			
Zinc	2.09		"	2.00	0.0212	103	75-125			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

TEPH by GC FID - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0491 - EPA 8015M Preparation: EPA 3510C Leachate 06/19/17 09:59										
Blank (B7F0491-BLK2)				Analyzed: 06/20/17 12:30						
TPH Oil Crude (C8-C40)	ND	0.10	mg/L							
Surrogate: o-Terphenyl	*0.107*		"	*0.101*		*106*	*46-168*			
LCS (B7F0491-BS2)				Analyzed: 06/20/17 12:02						
TPH Oil Crude (C8-C40)	2.01	0.10	mg/L	2.03		99.2	35-127			
Surrogate: o-Terphenyl	*0.133*		"	*0.101*		*132*	*46-168*			
LCS Dup (B7F0491-BSD2)				Analyzed: 06/20/17 12:16						
TPH Oil Crude (C8-C40)	1.81	0.10	mg/L	2.03		89.3	35-127	10.5	20	
Surrogate: o-Terphenyl	*0.119*		"	*0.101*		*118*	*46-168*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0579 - EPA 8260B Preparation: EPA 5030B VOCGCMS 06/21/17 10:41										
Blank (B7F0579-BLK1)			Analyzed: 06/21/17 12:31							
Benzene	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	"							
Toluene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: Dibromofluoromethane	*12.3*		*"*	*12.5*		*98.6*	*84-126*			
Surrogate: Toluene-d8	*10.0*		*"*	*12.5*		*80.2*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.8*		*"*	*12.5*		*94.5*	*66-123*			
LCS (B7F0579-BS1)			Analyzed: 06/21/17 11:37							
Benzene	25.7	0.50	ug/L	25.0		103	74-129			
Toluene	23.2	0.50	"	25.0		92.9	67-135			
Surrogate: Dibromofluoromethane	*12.3*		*"*	*12.5*		*98.2*	*84-126*			
Surrogate: Toluene-d8	*10.7*		*"*	*12.5*		*85.3*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.8*		*"*	*12.5*		*94.6*	*66-123*			
LCS Dup (B7F0579-BSD1)			Analyzed: 06/21/17 12:04							
Benzene	26.5	0.50	ug/L	25.0		106	74-129	2.91	20	
Toluene	23.8	0.50	"	25.0		95.2	67-135	2.47	20	
Surrogate: Dibromofluoromethane	*12.4*		*"*	*12.5*		*99.3*	*84-126*			
Surrogate: Toluene-d8	*10.4*		*"*	*12.5*		*83.4*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.9*		*"*	*12.5*		*95.5*	*66-123*			
Duplicate (B7F0579-DUP1)	**Source: 1702144-01**		Analyzed: 06/21/17 13:25							
Benzene	ND	0.50	ug/L		ND				20	
Ethylbenzene	ND	0.50	"		ND				20	
Toluene	ND	0.50	"		ND				20	
Xylenes (total)	ND	0.50	"		ND				20	
Surrogate: Dibromofluoromethane	*12.8*		*"*	*12.5*		*102*	*84-126*			
Surrogate: Toluene-d8	*10.0*		*"*	*12.5*		*80.2*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.5*		*"*	*12.5*		*91.9*	*66-123*			
Matrix Spike (B7F0579-MS1)	**Source: 1702175-01**		Analyzed: 06/21/17 20:53							
Benzene	27.2	0.50	ug/L	25.0	ND	109	62-143			
Toluene	23.9	0.50	"	25.0	ND	95.4	55-146			
Surrogate: Dibromofluoromethane	*13.0*		*"*	*12.5*		*104*	*84-126*			
Surrogate: Toluene-d8	*10.8*		*"*	*12.5*		*86.2*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*12.2*		*"*	*12.5*		*97.5*	*66-123*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0579 - EPA 8260B Preparation: EPA 5030B VOCGCMS 06/21/17 10:41										
Matrix Spike Dup (B7F0579-MSD1) **Source: 1702175-01** Analyzed: 06/21/17 21:20										
Benzene	25.6	0.50	ug/L	25.0	ND	102	62-143	6.10	20	
Toluene	22.6	0.50	"	25.0	ND	90.4	55-146	5.38	20	
Surrogate: Dibromofluoromethane	*13.1*		*"*	*12.5*		*105*	*84-126*			
Surrogate: Toluene-d8	*10.7*		*"*	*12.5*		*85.4*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*12.2*		*"*	*12.5*		*97.6*	*66-123*			
Batch B7F0607 - EPA 8260B Preparation: EPA 5030B VOCGCMS 06/22/17 09:45										
Blank (B7F0607-BLK1) Analyzed: 06/23/17 10:50										
Benzene	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	"							
Toluene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: Dibromofluoromethane	*12.6*		*"*	*12.5*		*101*	*84-126*			
Surrogate: Toluene-d8	*10.4*		*"*	*12.5*		*83.3*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.9*		*"*	*12.5*		*95.1*	*66-123*			
LCS (B7F0607-BS1) Analyzed: 06/23/17 09:02										
Benzene	27.3	0.50	ug/L	25.0		109	74-129			
Toluene	23.1	0.50	"	25.0		92.2	67-135			
Surrogate: Dibromofluoromethane	*12.5*		*"*	*12.5*		*99.7*	*84-126*			
Surrogate: Toluene-d8	*10.4*		*"*	*12.5*		*82.9*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.8*		*"*	*12.5*		*94.0*	*66-123*			
LCS Dup (B7F0607-BSD1) Analyzed: 06/23/17 09:29										
Benzene	28.4	0.50	ug/L	25.0		114	74-129	4.06	20	
Toluene	23.9	0.50	"	25.0		95.6	67-135	3.62	20	
Surrogate: Dibromofluoromethane	*12.5*		*"*	*12.5*		*100*	*84-126*			
Surrogate: Toluene-d8	*10.1*		*"*	*12.5*		*81.1*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*11.8*		*"*	*12.5*		*94.2*	*66-123*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0607 - EPA 8260B Preparation: EPA 5030B VOCGCMS 06/22/17 09:45										
Duplicate (B7F0607-DUP1) **Source: 1702199-01** Analyzed: 06/23/17 11:49										
Benzene	ND	0.50	ug/L		ND				20	
Ethylbenzene	ND	0.50	"		ND				20	
Toluene	ND	0.50	"		ND				20	
Xylenes (total)	ND	0.50	"		ND				20	
Surrogate: Dibromofluoromethane	*12.8*		*"*	*12.5*		*103*	*84-126*			
Surrogate: Toluene-d8	*10.2*		*"*	*12.5*		*81.8*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*12.0*		*"*	*12.5*		*95.6*	*66-123*			
Matrix Spike (B7F0607-MS1) **Source: 1702199-01** Analyzed: 06/23/17 19:28										
Benzene	27.2	0.50	ug/L	25.0	ND	109	62-143			
Toluene	22.2	0.50	"	25.0	ND	88.8	55-146			
Surrogate: Dibromofluoromethane	*12.8*		*"*	*12.5*		*103*	*84-126*			
Surrogate: Toluene-d8	*10.4*		*"*	*12.5*		*83.1*	*64-130*			
Surrogate: 4-Bromofluorobenzene	*12.4*		*"*	*12.5*		*99.2*	*66-123*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0568 - EPA 8270M SIM Preparation: EPA 3510C MS 06/21/17 08:34										
Blank (B7F0568-BLK1)			Analyzed: 06/21/17 17:20							
Acenaphthene	ND	0.10	ug/L							
Acenaphthylene	ND	0.10	"							
Anthracene	ND	0.10	"							
Benz (a) anthracene	ND	0.10	"							
Benzo (b) fluoranthene	ND	0.10	"							
Benzo (k) fluoranthene	ND	0.10	"							
Benzo (a) pyrene	ND	0.10	"							
Benzo (g,h,i) perylene	ND	0.10	"							
Chrysene	ND	0.10	"							
Dibenz (a,h) anthracene	ND	0.10	"							
Fluoranthene	ND	0.10	"							
Fluorene	ND	0.10	"							
Indeno (1,2,3-cd) pyrene	ND	0.10	"							
Naphthalene	ND	0.10	"							
Phenanthrene	ND	0.10	"							
Pyrene	ND	0.10	"							
Surrogate: p-Terphenyl-d14	*0.980*		*"*	*0.800*		*122*	*38-195*			
LCS (B7F0568-BS1)			Analyzed: 06/21/17 16:37							
Acenaphthene	0.500	0.10	ug/L	0.800		62.5	16-113			
Acenaphthylene	0.440	0.10	"	0.800		55.0	18-113			
Anthracene	0.640	0.10	"	0.800		80.0	38-127			
Benz (a) anthracene	0.800	0.10	"	0.800		100	74-132			
Benzo (b) fluoranthene	0.800	0.10	"	0.800		100	63-137			
Benzo (k) fluoranthene	0.770	0.10	"	0.800		96.2	71-144			
Benzo (a) pyrene	0.740	0.10	"	0.800		92.5	72-125			
Benzo (g,h,i) perylene	0.700	0.10	"	0.800		87.5	55-155			
Chrysene	0.770	0.10	"	0.800		96.2	83-132			
Dibenz (a,h) anthracene	0.790	0.10	"	0.800		98.8	60-151			
Fluoranthene	0.880	0.10	"	0.800		110	64-129			
Fluorene	0.490	0.10	"	0.800		61.2	18-122			
Indeno (1,2,3-cd) pyrene	0.750	0.10	"	0.800		93.8	62-152			
Naphthalene	0.410	0.10	"	0.800		51.2	11-112			
Phenanthrene	0.650	0.10	"	0.800		81.2	32-124			
Pyrene	0.900	0.10	"	0.800		112	65-129			
Surrogate: p-Terphenyl-d14	*1.03*		*"*	*0.800*		*129*	*38-195*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0568 - EPA 8270M SIM Preparation: EPA 3510C MS 06/21/17 08:34										
LCS Dup (B7F0568-BSD1)			Analyzed: 06/21/17 16:58							
Acenaphthene	0.610	0.10	ug/L	0.800		76.2	16-113	19.8	30	
Acenaphthylene	0.540	0.10	"	0.800		67.5	18-113	20.4	30	
Anthracene	0.650	0.10	"	0.800		81.2	38-127	1.55	30	
Benz (a) anthracene	0.790	0.10	"	0.800		98.8	74-132	1.26	30	
Benzo (b) fluoranthene	0.780	0.10	"	0.800		97.5	63-137	2.53	30	
Benzo (k) fluoranthene	0.830	0.10	"	0.800		104	71-144	7.50	30	
Benzo (a) pyrene	0.780	0.10	"	0.800		97.5	72-125	5.26	30	
Benzo (g,h,i) perylene	0.720	0.10	"	0.800		90.0	55-155	2.82	30	
Chrysene	0.800	0.10	"	0.800		100	83-132	3.82	30	
Dibenz (a,h) anthracene	0.790	0.10	"	0.800		98.8	60-151	0.00	30	
Fluoranthene	0.820	0.10	"	0.800		102	64-129	7.06	30	
Fluorene	0.580	0.10	"	0.800		72.5	18-122	16.8	30	
Indeno (1,2,3-cd) pyrene	0.750	0.10	"	0.800		93.8	62-152	0.00	30	
Naphthalene	0.470	0.10	"	0.800		58.8	11-112	13.6	30	
Phenanthrene	0.610	0.10	"	0.800		76.2	32-124	6.35	30	
Pyrene	0.850	0.10	"	0.800		106	65-129	5.71	30	
Surrogate: p-Terphenyl-d14	*0.980*		*"*	*0.800*		*122*	*38-195*			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Dissolved Gases by RSK 175 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0703 - RSK 175 Preparation: None-gases 06/26/17 08:52										
Blank (B7F0703-BLK1)				Analyzed: 06/26/17 08:52						
Carbon Dioxide	ND	0.100	mg/L							
Methane	ND	0.100	"							
LCS (B7F0703-BS1)				Analyzed: 06/26/17 08:02						
Carbon Dioxide	7.62	0.100	mg/L	7.44		102	70-130			
Methane	2.90	0.100	"	2.98		97.3	70-130			
LCS Dup (B7F0703-BSD1)				Analyzed: 06/26/17 08:33						
Carbon Dioxide	7.56	0.100	mg/L	7.44		102	70-130	0.791	30	
Methane	2.87	0.100	"	2.98		96.3	70-130	1.04	30	
Duplicate (B7F0703-DUP1) **Source: 1702159-01**				Analyzed: 06/26/17 14:06						
Carbon Dioxide	5.69	0.100	mg/L		5.22			8.62	30	
Methane	5.47	0.100	"		4.92			10.5	30	

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7F0542 - EPA 200.8 Preparation: EPA 200.8 06/20/17 11:06										
Blank (B7F0542-BLK1)				Analyzed: 06/26/17 11:24						
Uranium	ND	0.0010	mg/L							
LCS (B7F0542-BS1)				Analyzed: 06/26/17 12:37						
Uranium	0.0557	0.0010	mg/L	0.0500		111	85-115			
LCS Dup (B7F0542-BSD1)				Analyzed: 06/26/17 11:33						
Uranium	0.0537	0.0010	mg/L	0.0500		107	85-115	3.69	20	
Duplicate (B7F0542-DUP1)	**Source: 1702179-02**			Analyzed: 06/26/17 11:53						
Uranium	0.000791	0.0010	mg/L		0.00122			42.4	20	**QR-04**
Matrix Spike (B7F0542-MS1)	**Source: 1702161-01**			Analyzed: 06/26/17 11:36						
Uranium	0.0506	0.0010	mg/L	0.0500	0.00105	99.1	70-130			
Matrix Spike Dup (B7F0542-MSD1)	**Source: 1702161-01**			Analyzed: 06/26/17 11:40						
Uranium	0.0526	0.0010	mg/L	0.0500	0.00105	103	70-130	3.88	20	
Post Spike (B7F0542-PS1)	**Source: 1702161-02**			Analyzed: 06/26/17 11:43						
Uranium	55.6		ug/L	50.0	0.574	110	75-125			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

E905.0 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch SR900664 - E905.0 Preparation: NONE 07/24/17 00:00										
LCS (LCS-SR900664)			Analyzed: 07/24/17 00:00							
Strontium 90	22		pCi/L			91	80-120			
Blank (MB-SR900664)			Analyzed: 07/24/17 00:00							
Strontium 90	0.8	0.9	pCi/L				-			**Ua**
Matrix Spike Duplicate (MSD-SR900664) **Source: 1702159-01**			Analyzed: 07/24/17 00:00							
Strontium 90	120		pCi/L		1.7	93	70-130	0	20	
Matrix Spike (MS-SR900664) **Source: 1702159-01**			Analyzed: 07/24/17 00:00							
Strontium 90	120		pCi/L		1.7	93	70-130			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

E906.0 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch R225223 - E906.0 Preparation: NONE 07/20/17 00:00										
LCS (LCS-R225223)			Analyzed: 07/20/17 00:00							
Tritium	77000		pCi/L			99	90-110			
Blank (MB-R225223)			Analyzed: 07/20/17 00:00							
Tritium	50	400	pCi/L				-			**Ua**
Matrix Spike Duplicate (MSD-R225223) **Source: 1702159-01**			Analyzed: 07/20/17 00:00							
Tritium	62000		pCi/L		4420	74	80-120	1.8	20	**S**
Matrix Spike (MS-R225223) **Source: 1702159-01**			Analyzed: 07/20/17 00:00							
Tritium	63000		pCi/L		4420	76	80-120			**S**

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

M900.0 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch WG426130 - M900.0 Preparation: NONE 07/03/17 00:00										
Matrix Spike (L38048-02MS)	**Source: L38048-02**			Analyzed: 07/03/17 00:36						
Gross Alpha	110	12	pCi/L	100	14	96	83-133			
Duplicate (L38049-02DUP)	**Source: L38049-02**			Analyzed: 07/03/17 00:33						
Gross Alpha	7.7	4.8	pCi/L		20		-	1.52	2	
Duplicate (L38049-02DUP1)	**Source: L38049-02**			Analyzed: 07/03/17 00:33						
Gross Beta	24	6.3	pCi/L		31		-	0.75	2	
Matrix Spike (L38049-05MS)	**Source: L38049-05**			Analyzed: 07/03/17 00:37						
Gross Beta	110	7.1	pCi/L	100	-2.1	112	70-129			
Duplicate (L38050-02DUP)	**Source: L38050-02**			Analyzed: 07/03/17 00:34						
Gross Alpha	1.3	3.8	pCi/L		2.7		-		2	
Duplicate (L38050-02DUP1)	**Source: L38050-02**			Analyzed: 07/03/17 00:34						
Gross Beta	21	6.7	pCi/L		29		-	0.84	2	
LCS (WG425668LCSW)				Analyzed: 07/03/17 00:01						
Gross Alpha	100	8.7	pCi/L	100		100	83-133			
LCS (WG425668LCSW1)				Analyzed: 07/03/17 00:02						
Gross Beta	100	6.5	pCi/L	100		100	70-129			
Blank (WG425668PBW)				Analyzed: 07/03/17 00:00						
Gross Alpha	-.21	1.3	pCi/L				-6.6			
Blank (WG425668PBW1)				Analyzed: 07/03/17 00:00						
Gross Beta	-.74	2.8	pCi/L				-18.8			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

M903.1 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch WG427067 - M903.1 Preparation: NONE 07/18/17 00:00										
Duplicate (L37923-01DUP)	**Source: L37923-01**			Analyzed: 07/18/17 00:30						
Radium 226	.16	0.09	pCi/L		0.14		-	0.18	2	
Duplicate (L37923-02DUP)	**Source: L37923-02**			Analyzed: 07/18/17 00:31						
Radium 226	.23	0.09	pCi/L		0.09		-	1.22	2	
Matrix Spike (L37923-05MS)	**Source: L37923-05**			Analyzed: 07/18/17 00:33						
Radium 226	22	0.57	pCi/L	20	0.08	110	43-148			
LCS (WG426043LCSW)				Analyzed: 07/18/17 00:01						
Radium 226	17	0.43	pCi/L	20		85	43-148			
Blank (WG426043PBW)				Analyzed: 07/18/17 00:00						
Radium 226	.14	0.08	pCi/L				-0.44			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

M904.0 - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch WG427051 - M904.0 Preparation: NONE 07/14/17 00:00										
Duplicate (L37857-01DUP)	**Source: L37857-01**			Analyzed: 07/14/17 19:56						
Radium 228	1.2	0.94	pCi/L		0.84		-	0.34	2	
Duplicate (L37857-02DUP)	**Source: L37857-02**			Analyzed: 07/14/17 19:56						
Radium 228	.36	0.6	pCi/L		0.93		-	0.68	2	
Matrix Spike (L37858-02MS)	**Source: L37858-02**			Analyzed: 07/14/17 19:56						
Radium 228	7.2	1.3	pCi/L	9.62	0.17	73	47-123			
LCS (WG426425LCSW)				Analyzed: 07/14/17 15:51						
Radium 228	6.7	0.87	pCi/L	9.62		70	47-123			
Blank (WG426425PBW)				Analyzed: 07/14/17 15:51						
Radium 228	1.1	0.88	pCi/L				-1.72			

Vaquero - Hermosa Rd, Bakersfield	Project: Ardantz Lease	
4700 Stockdale HWY, Suite120	Project Number: Ardantz # 506 / API # 08322869	**Reported:**
Bakersfield CA, 93309	Project Manager: Seth Hunter	07/27/2017 17:41

Notes and Definitions

Ua	Not detected at minimum detectable concentration.
S	Spike response is outside of acceptance range for this analysis. LCS and RPD recoveries are acceptable; therefore, the response is considered to be matrix related.
R-06	The Reporting Limit has been raised to account for the presence of high levels of analytes.
R-05	The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
QR-04	The RPD exceeded the QC control limits.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery and/or RPD values.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QL-02	The spike recovery is outside the control limits.
N-05	Total analyte concentration exceeds TCLP limit.
D1	Sample required dilution due to matrix.
RL	Reporting Limit (Quantitation Limit)
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference

Oilfield Environmental and Compliance

307 Roemer Way Suite 300, Santa Maria, CA 93454
Phone: (805) 922-4772 Fax: (805) 925-3376 www.oecusa.com

101 Adkisson Way, Taft, CA 93268
Phone: (661) 762-9143

CHAIN OF CUSTODY

Company: Vaquero Energy

Address: 15545 Hermosa Road

City/State/ZIP: Bakersfield, CA

Phone: 661-363-7240 Fax: E-mail: cwalker@vaquero energy.com

Report To: Chad Walker Sampler: Pete Alcocer

Report Format(s): FAX- ☐ PDF (std)- ☐ Colt/LUFT EDF- ☐ EDD- ☐

Turnaround Time: 10 Days- ☐ 5 Days (std)- ☑ 3 Days- ☐ 2 Days- ☐ 1 Day- ☐ ASAP- ☐

NOTE: Samples received after 4:00PM will be considered as received the next business day

Project Name/#: Ardantz # 506 / API # 08322869

Site: Ardantz Lease

OEC Sample ID	Date/Time Sampled	Matrix** (see key)	# of Cont.	Client Sample ID	DOGGR Underground Injection Control Analyses	TDS (DOGGR)	TDS Field	Turbidity Field	Temperature Field	Electro Conductivity Field	pH Field			Analysis	Preservative	Sample Container
1702142-1A	06/16/17 @1330	PW	1	Ardantz # 506	X	X	X	X	X	X	X			TDS /Alkalinity /Anions	≤ 6° C	1 x Liter Poly
														Title 22 Metals	HNO_3	1 x 250mL Poly
														BTEX	HCl	3 x 40mL VOA
														TPH Crude Oil	≤ 6° C	1 x 32oz Amber Glass
														PAHs	≤ 6° C	1 x 32oz Amber Glass
														Methane	≤ 6° C	2 x 40mLVOA
														Uranium	HNO_3	1 x 250ml poly
														Radionuclides AC2	HNO_3	3x 1L Poly
														Tritium	≤ 6° C	1 X 250ml amber glass

Special Instructions:

Attention: shunter@vaqueroenergy.com, cwalker@vaqueroenergy.com, SCunningham@vaqueroenergy.com, pmuncz@vaquero energy.com, mtownsend@vaqueroenergy.com

Relinquished By:	Alcocer	Date: 06/16/17	Time: 1348
Received By:	BUNDICK	Date: 6/16/17	Time: 1348
Relinquished By:		Date: 6/16/17	Time: 1442
Received By:		Date: 6/16/17	Time: 1442
Relinquished By:		Date:	Time:
Received By:		Date:	Time:

Matrix Key**:
A = air / vapor
AQ = aqueous
DW = drinking water
F = filter
GW = ground water
P = product / oil
PW = product water
S = solid / sediment
SW = surface water
WP = wipe
WW = waste water

Comments/PO#:

Ticket # 6698

Site Witness: DOGGR

Site Witness: RWQCB 6-16-17

Rev. 09/23/2014

CLIENT: VAQUERO WORK ORDER: 1702142 TEMPERATURE: 5.7 °C SAMPLE RECEIPT

Acceptable Range: 0°C to 6°C [see exception notes below]

COC RECEIVED DATE/TIME: 06/16/17 @ 1442 LOGIN DATE/TIME: 06/16/17 @ 1643 REFRIGERATOR(S): 8

SAMPLE TRANSPORT

- [X] OEC Courier/Sampler
- [ ] Delivery (Other than OEC)
- [ ] After-Hours Outside Drop-Off [Brought Inside]
  - Initials/Date/Time: _____
- [ ] Shipment Carrier: _____
  - Tracking #: _____

CUSTODY SEALS [X] None Present

Cooler(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

Sample(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

SAMPLE RECEIPT, CONDITION, PRESERVATION

- [X] Samples Received on Ice Within Temperature Range [Acceptable]
- [ ] Samples Received Outside Temperature Range [Acceptable]
  - [ ] Direct from Field, on Ice
  - [ ] Ambient: Air or Filter Matrix
  - [ ] Received Ambient, Placed on Ice for Transport
  - [ ] Sample Temperature Acceptable for Analysis Requested
- [ ] Samples Received Outside Temperature Range [Exception]
  - [ ] Insufficient Ice or Unknown Cause
  - [ ] See Problem Chain *

(*) PROBLEM CHAIN REQUIRED	YES	NO	N/A	(**) OEC PRES. ID
Completed COC(s) Received With Samples	X	[ ]*	[ ]	
Correct Container(s) for Analysis Requested	X	[ ]*	[ ]	
Container(s) Intact and in Good Condition	X	[ ]*	[ ]	
Container Label(s) Consistent with COC	X	[ ]*	[ ]	
Proper Preservation on Sample Label(s)	[ ]	[ ]	X	
OEC Preservative Added **	[ ]	[ ]	X	
VOA Containers Free of Headspace	[ ]	[ ]V	X (V)	See Comments below or Problem Chain
Tedlar Bag(s) Free of Condensation	[ ]	[ ]*	X	

[ ]* OR [ ]↓(Comments) Expedited PM Notification [Init/Date/Time]: _____

CONTAINERS, COC CHANGES, AND/OR CORRECTIONS

OEC CONTAINER ID	CONTAINER DESCRIPTION	PRESERVATIVE	CHECKS: Cl⁻, S⁻ &/or pH	MATRIX	COMMENTS	INITIALS
1A	1-1L Poly	—		PW		

Rev. 02/12/2016

RECEIPT LOGIN BY: EM RECEIPT REVIEWED BY: CKL

Oilfield Environmental & Compliance, Inc.
307 Roemer Way, Suite 300, Santa Maria, Ca 93454
101 Adkisson Way, Taft, Ca 93268
Phone: 805-922-4772 / 661-762-9143
AR@oecusa.com

Date: 06/16/17

Employee Name: PETE ALCOCER

Client Name: VAQUERO ENERGY

Project / Site Name: ARONTZ #586 / VAQUERO

Roundtrip Drive Time: 0.75	Roundtrip Drive Mileage: 32
Start Field Time: 0830	Stop Field Time: 1430
Start Field Mileage: 188579	Stop Field Mileage: 188579

Consumables: Field Analyzers
EC Meter, pH, Turbidity Meter
1-Field Tech
Plus 1-Field Tech For 1hr Chris Burdick,
1-hr prep For Stamps

Decription / Comment: Analyzed Field pH, TDS, Conductivity, Turbidity, grabbed 1-TDS For LAB analysis
Well Return Safely To GRABB UIC
Stamps

Admin Use:

Name:	Initials:	Date:
Total Drive Time:	Total Field Time:	
Total Drive Mileage:	Total Field Mileage:	

TICKET NO. 6698

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

Vaquero Energy / Ardantz Lease UIC
DOGGR Injection and Formation Waters Field Procedures

Sample Dates: 06/16/17 OEC Project # 1702142-1 & 06/17/17 OEC Project # 1702159
Sample Tech: Pete Alcocer
Sampling Locations: Ardantz # 506 UIC API # 08322869

SCOPE/SAFETY

Scope: The following is a summary of OEC's field sampling procedures for collection of oil & water directly from the well head. Procedures may be subject to change due to variability of sampling and matrix conditions at each unique location.

Safety Procedures: All client specific safety procedures/policies will be reviewed and understood before a technician begins work. JSA documentation shall be filled out and signed by represented parties. The technician shall confirm with the client the project information required for the Chain of Custody (COC) document including project ID, sample point ID, report to personnel, turnaround time (TAT) and any additional pertinent information (i.e. API numbers, etc.). Where possible, the technician should pre-label sample containers for the testing requested prior to sampling.

PPE: Proper personal protective equipment (PPE) for oilfield working conditions is required for the duration of the sampling event and at all times while on-site. These include full flame resistant (FR) clothing, H2S monitor, steel toe work boots, hard hat, chemical/heat resistant gloves, safety glasses, and any additional equipment field conditions may require (i.e. face shield, heat protection, raingear, etc.).

Caution: Well head fluids have not gone through vapor separation and could contain high levels of entrained H2S. Use discretion when opening valves and pulling samples. Stand upwind and utilize equipment that allows for directional flow of samples to avoid potential exposure. Utilize proper equipment when operating gate valves and avoid using gate valves as the primary flow control for sampling. Implement a ball valve manifold for sampling whenever feasible for optimum flow control. Well head sample points include moving parts and tripping hazards that must be recognized and identified prior to commencing work.

EQUIPMENT / SAMPLING PROCEDURES

- Stainless steel manifold w/ ball valve (3/8", 1/4", 1/2")
- Separatory funnel(s) with ring stand
- Five gallon metal bucket with ring top lid
- Grounding cables
- Sampling containers with required preservation as needed (various)
- Ice chest(s)/Coolers + ice
- IR Temperature Gun
- Field sampling instrumentation (pH, Turbidity, EC, Temp, TDS)

Sampling: Using the temperature gun, scan the working temperature of the sampling point to determine the temperature of the fluids. Adjust PPE selection as necessary based on observed temperature.

Identify the sampling point if not previously established/labeled. This is typically a production flow line directly off of the well head. Double check that all valves are closed prior to removing gauge or plug at determined sampling point. Once confirmed closed, slowly remove gauge, listening for hissing of pressure release. If hissing does not die down or pressure from partially removed gauge does not drop, tighten gauge back on and re-check valves. It the valves appear to be closed, identify an alternate sampling point where pressure can be controlled.

Once gauge is safely removed from the sampling point, if necessary to control excess pressure, connect a stainless steel manifold with a ball valve, ensuring that ball valve is closed before pulling required samples. Open the gate valve and then place the 5 gallon bucket under ball valve; slowly open the ball valve and purge the sample fluid into the bucket. **Important**: A grounding cable will be used to connect the metal bucket to the well head. Establish where the waste/purge fluids will be disposed of prior to this step.

Once the lines have been purged, well fluids are flowed slowly into a separatory funnel, controlling flow with a secondary ball valve (double block and bleed) if necessary. Time is allowed for phase separation of the water. The water phase is then flowed into the proper sample container by slowly opening the stop cock at the bottom of the separatory funnel. **Note:** Extra caution is observed when adding sample to a container having an acid preservative such as Hydrochloric Acid. The water is introduced slowly, allowing it to run down the inside wall of the sampling container to avoid splashing. Fumes that may be created during this process are mitigated by staying upwind of the vapors.

Field Testing: The following field testing is performed immediately using an aliquot of the well fluid collected in the above procedure:

1. pH
2. Electro Conductivity
3. Calculated TDS
4. Temperature
5. Turbidity

All field data is recorded on the Fluid Sampling Log Sheet and will include the following: Client, Facility, Sample ID, Sample Date and Time, Agency presence, OEC Sampling technician and Field notes.

Sample Storage / Transport: Once samples have been placed in the proper containers, they are placed into a cooler on ice and transported to the laboratory.

Matrix Variability / Water Content: Due to the variability of the oil/fluid matrix from well to well, it is difficult to know the exact ratio prior to well head sampling. Since the fluids will likely be in emulsion, it is recommended that the fluid sample be placed directly into a separatory funnel to allow for matrix separation by gravity. Due to the low water content of some well / aquifer locations, special measures must be used to obtain sufficient sample volumes. In these cases, a large amount of well fluids must first be flowed into a primary container such as a 55 gallon drum, sealed and allowed to separate (Petroleum from Water) for an unspecified amount of time. Post phase separation, the water portion may be pumped out of the primary container and put into the appropriate bottle ware for the required analyses.

Site Specific Information / Deviation:

06/16/17 OEC# 1702142-1 : Sampling event for Ardantz # 506 , field instruments were calibrated on site at 0855hrs. DOGGR and RWQCB arrived on site to witness sampling event. Filled four separatory funnels directly from wellhead, extracted approximately 300 ml of produced water. Analyzed conductivity, pH , turbidity , temperature and TDS by calculation. See attached log sheet for results. Continued to fill separatory funnels to begin filling sample containers for UIC required analysis. Sample separation of crude emulsion and produced water were decreasing, within one and half hours four separatory funnels produced only 2-250ml poly's, 1-250 ml amber, 5-40ml VOAS.

Chad Walker of Vaquero suggested to Aaron Katona (RWQCB) that we fill one of two 55-gal. drum onsite and sit for one hour. Filled 7- separatory funnels after one hour stand by time, produced water separation was minimal at 100 ml total. Aaron Katona was relieved by Mike McKee (RWQCB).Seven separatory funnels sat for another hour, Extracted 500ml produced water. This sample was used for one TDS analysis at OEC laboratory, Per Mike McKee (RWQCB). Sample time was at 1330 hrs.

Chad Walker suggested to Mike McKee(RWQCB) we fill both drums with crude emulsion, place custody seals on all drum openings (valves, Bung and plugs,). RWQCB approved deviation of sampling procedure, to continue sampling plan for following morning Saturday 06/17/17 at 0800. Custody Seals were place on all openings of two drums on site By OEC, photos were taken by all parties present. (Continued)

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

06/17/17 OEC Project # 1702159-1

OEC arrived on site at 0800hrs Saturday for continuation of sampling event of Ardantz # 506.
Chad Walker and Pancho Munoz of Vaquero Energy witness seals being broken by Pete Alcocer of OEC.
OEC open valve to sample drum to checked Crude oil and water sample separation.
Samples containers were filled directly from 1" ball valve. OEC filled 14 – sample containers to DOGGR Underground Injection Control Analysis requirements. Labels and Chain of Custody filled out completely, Samples place on ice for transportation to OEC Inc. Laboratory.

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www.oecusa.com

Fluid Sampling Log

Date: 06/16/17

Sampler's name: PETE ALCOCER

Company:

Company Sample for: VAQUERO ENERGY

Well/Facility Location: ARDANTZ # 506

Purpose of Sampling: UIC

Well Site Supervisor: SETH HUNTER / CHAD WALKER

Other persons witnessing sampling:
MARK DAVIS - DOGGR
Aaron Katona - CCRWQCB

Time	Activity	Other Information
0855	MI 1741 Pocket Tester pH Meter Calibration	7 pH Buffer = 7.02
	MI 1741 Pocket Tester pH Meter Calibration	4 pH Buffer = 4.00
	MI 1741 Pocket Tester pH Meter Calibration	10 pH Buffer = 10.02
	pH Check Std	7 pH Buffer = 7.05
	2100Q Turbidity Meter Calibration	20 NTU Std = 19.9 NTU
	2100Q Turbidity Meter Calibration	100 NTU Std = 100 NTU
	2100Q Turbidity Meter Calibration	800 NTU Std = 799 NTU
	Turbidity Check Std	10 NTU Std = 9.96 NTU
	Mi 306 EC/TDS/NaCl/Temp Meter Calibration	5000 µS Std = 5,100 µs
	EC Check Std 10,000 = 9,970 µs	10000 µS Std = 9,900 µs
0945	Well / Vessel ID: ARDANTZ #506	API N° # 08322869
	pH : 6.93	
	E.Cond. : 17.53 ms = 17,530 µs	
	TDS Avg. : 12,271 mg/l	
	Turbidity : 584 NTU 3:DIC. = (1752 NTU Results)	
	Temp @ : 31 °C	
	Well ID:	API N°
	pH :	
	E.Cond. : ms	
	TDS Avg. : mg/l	
	Turbidity : NTU	
	Temp @ : °C	

Oilfield Environmental and Compliance

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101 Adkisson Way, Taft, CA 93268
Phone: (661) 762-9143

CHAIN OF CUSTODY

Company: Vaquero Energy
Address: 15545 Hermosa Road
City/State/ZIP: Bakersfield, CA
Phone: 661-363-7240 Fax: E-mail: cwalker@vaquero energy.com
Report To: Chad Walker Sampler: Pete Alcocer
Report Format(s): FAX- ☐ PDF (std)- ☐ Colt/LUFT EDF- ☐ EDD- ☐
Turnaround Time: 10 Days- ☐ 5 Days (std)- ☑ 3 Days- ☐ 2 Days- ☒ 1 Day- ☐ ASAP- ☐
NOTE: Samples received after 4:00PM will be considered as received the next business day

Project Name/#: Ardantz # 506 / API # 08322869
Site: Ardantz Lease

OEC Sample ID	Date/Time Sampled	Matrix** (see key)	# of Cont.	Client Sample ID	DOGGR Underground Injection Control Analyses	TDS (Cl, SO4)	TDS Field	Turbidity Field	Temperature Field	Electro Conductivity Field	pH Field	
1702142-1A	06/16/17 @1330	PW	1	Ardantz # 506 (PA)	X	X	X	X	X	X	X	

Analysis requested

Analysis	Preservative	Sample Container
TDS /Alkalinity /Anions	≤ 6° C	1 x Liter Poly
Title 22 Metals	HNO_3	1 x 250mL Poly
BTEX	HCl	3 x 40mL VOA
TPH Crude Oil	≤ 6° C	1 x 32oz Amber Glass
PAHs	≤ 6° C	1 x 32oz Amber Glass
Methane	≤ 6° C	2 x 40mLVOA
Uranium	HNO_3	1 x 250ml poly
Radionuclides AC2	HNO_3	3x 1L Poly
Tritium	≤ 6° C	1 X 250ml amber glass

Special Instructions:
Attention: shunter@vaqueroenergy.com, cwalker@vaqueroenergy.com ,SCunningham@vaqueroenergy.com, pmunoz@vaquero energy.com,mtownsend@vaquer oenergy.com

Relinquished By:	Alcocer	Date: 06/16/17	Time: 1348
Received By:	BURDICK	Date: 6/16/17	Time: 1348
Relinquished By:		Date: 6/16/17	Time: 1442
Received By:		Date: 6/16/17	Time: 1442
Relinquished By:		Date:	Time:
Received By:		Date:	Time:

Matrix Key**:
A = air / vapor
AQ = aqueous
DW = drinking water
F = filter
GW = ground water
P = product / oil
PW = product water
S = solid / sediment
SW = surface water
WP = wipe
WW = waste water

Comments/PO#: * rush 2 day TDS before starting DOGGR suite MH 6/16/17

Ticket # 6698

Site Witness: DOGGR

Site Witness: RWQCB 6-16-17

Rev. 09/23/2014

Oilfield Environmental and Compliance

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CHAIN OF CUSTODY

Company: Vaquero Energy
Address: 15545 Hermosa Road
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Phone: 661-363-7240 Fax: E-mail: cwalker@vaquero energy.com
Report To: Chad Walker Sampler: Pete Alcocer
Report Format(s): FAX- ☐ PDF (std)- ☐ Colt/LUFT EDF- ☐ EDD- ☐
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Project Name/#: Ardantz # 506 / API # 08322869
Site: Ardantz Lease

OEC Sample ID	Date/Time Sampled	Matrix** (see key)	# of Cont.	Client Sample ID	DOGGR Underground Injection Control Analyses	TDS (Cl, SO4)	TDS Field	Turbidity Field	Temperature Field	Electro Conductivity Field	pH Field	
1702142-1A	06/16/17 @1330	PW	1	Ardantz # 506 (PA)	X	X	X	X	X	X	X	

Analysis requested

Analysis	Preservative	Sample Container
TDS /Alkalinity /Anions	≤ 6° C	1 x Liter Poly
Title 22 Metals	HNO_3	1 x 250mL Poly
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Special Instructions:
Attention: shunter@vaqueroenergy.com, cwalker@vaqueroenergy.com ,SCunningham@vaqueroenergy.com, pmunoz@vaquero energy.com,mtownsend@vaquer oenergy.com

Relinquished By:	Alcocer	Date: 06/16/17	Time: 1348
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Matrix Key**:
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Comments/PO#: * rush 2 day TDS before starting DOGGR suite MH 6/16/17

Ticket # 6698

Site Witness: DOGGR

Site Witness: RWQCB 6-16-17

Rev. 09/23/2014

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

Vaquero Energy / Ardantz Lease UIC
DOGGR Injection and Formation Waters Field Procedures

Sample Dates: 06/16/17 OEC Project # 1702142-1 & 06/17/17 OEC Project # 1702159
Sample Tech: Pete Alcocer
Sampling Locations: Ardantz # 506 UIC API # 08322869

SCOPE/SAFETY

Scope: The following is a summary of OEC's field sampling procedures for collection of oil & water directly from the well head. Procedures may be subject to change due to variability of sampling and matrix conditions at each unique location.

Safety Procedures: All client specific safety procedures/policies will be reviewed and understood before a technician begins work. JSA documentation shall be filled out and signed by represented parties. The technician shall confirm with the client the project information required for the Chain of Custody (COC) document including project ID, sample point ID, report to personnel, turnaround time (TAT) and any additional pertinent information (i.e. API numbers, etc.). Where possible, the technician should pre-label sample containers for the testing requested prior to sampling.

PPE: Proper personal protective equipment (PPE) for oilfield working conditions is required for the duration of the sampling event and at all times while on-site. These include full flame resistant (FR) clothing, H2S monitor, steel toe work boots, hard hat, chemical/heat resistant gloves, safety glasses, and any additional equipment field conditions may require (i.e. face shield, heat protection, raingear, etc.).

Caution: Well head fluids have not gone through vapor separation and could contain high levels of entrained H2S. Use discretion when opening valves and pulling samples. Stand upwind and utilize equipment that allows for directional flow of samples to avoid potential exposure. Utilize proper equipment when operating gate valves and avoid using gate valves as the primary flow control for sampling. Implement a ball valve manifold for sampling whenever feasible for optimum flow control. Well head sample points include moving parts and tripping hazards that must be recognized and identified prior to commencing work.

EQUIPMENT / SAMPLING PROCEDURES

- Stainless steel manifold w/ ball valve (3/8", 1/4", 1/2")
- Separatory funnel(s) with ring stand
- Five gallon metal bucket with ring top lid
- Grounding cables
- Sampling containers with required preservation as needed (various)
- Ice chest(s)/Coolers + ice
- IR Temperature Gun
- Field sampling instrumentation (pH, Turbidity, EC, Temp, TDS)

Sampling: Using the temperature gun, scan the working temperature of the sampling point to determine the temperature of the fluids. Adjust PPE selection as necessary based on observed temperature.

Identify the sampling point if not previously established/labeled. This is typically a production flow line directly off of the well head. Double check that all valves are closed prior to removing gauge or plug at determined sampling point. Once confirmed closed, slowly remove gauge, listening for hissing of pressure release. If hissing does not die down or pressure from partially removed gauge does not drop, tighten gauge back on and re-check valves. It the valves appear to be closed, identify an alternate sampling point where pressure can be controlled.

Once gauge is safely removed from the sampling point, if necessary to control excess pressure, connect a stainless steel manifold with a ball valve, ensuring that ball valve is closed before pulling required samples. Open the gate valve and then place the 5 gallon bucket under ball valve; slowly open the ball valve and purge the sample fluid into the bucket. **Important**: A grounding cable will be used to connect the metal bucket to the well head. Establish where the waste/purge fluids will be disposed of prior to this step.

Once the lines have been purged, well fluids are flowed slowly into a separatory funnel, controlling flow with a secondary ball valve (double block and bleed) if necessary. Time is allowed for phase separation of the water. The water phase is then flowed into the proper sample container by slowly opening the stop cock at the bottom of the separatory funnel. **Note:** Extra caution is observed when adding sample to a container having an acid preservative such as Hydrochloric Acid. The water is introduced slowly, allowing it to run down the inside wall of the sampling container to avoid splashing. Fumes that may be created during this process are mitigated by staying upwind of the vapors.

Field Testing: The following field testing is performed immediately using an aliquot of the well fluid collected in the above procedure:

1. pH
2. Electro Conductivity
3. Calculated TDS
4. Temperature
5. Turbidity

All field data is recorded on the Fluid Sampling Log Sheet and will include the following: Client, Facility, Sample ID, Sample Date and Time, Agency presence, OEC Sampling technician and Field notes.

Sample Storage / Transport: Once samples have been placed in the proper containers, they are placed into a cooler on ice and transported to the laboratory.

Matrix Variability / Water Content: Due to the variability of the oil/fluid matrix from well to well, it is difficult to know the exact ratio prior to well head sampling. Since the fluids will likely be in emulsion, it is recommended that the fluid sample be placed directly into a separatory funnel to allow for matrix separation by gravity. Due to the low water content of some well / aquifer locations, special measures must be used to obtain sufficient sample volumes. In these cases, a large amount of well fluids must first be flowed into a primary container such as a 55 gallon drum, sealed and allowed to separate (Petroleum from Water) for an unspecified amount of time. Post phase separation, the water portion may be pumped out of the primary container and put into the appropriate bottle ware for the required analyses.

Site Specific Information / Deviation:

06/16/17 OEC# 1702142-1 : Sampling event for Ardantz # 506 , field instruments were calibrated on site at 0855hrs. DOGGR and RWQCB arrived on site to witness sampling event. Filled four separatory funnels directly from wellhead, extracted approximately 300 ml of produced water. Analyzed conductivity, pH , turbidity , temperature and TDS by calculation. See attached log sheet for results. Continued to fill separatory funnels to begin filling sample containers for UIC required analysis. Sample separation of crude emulsion and produced water were decreasing, within one and half hours four separatory funnels produced only 2-250ml poly's, 1-250 ml amber, 5-40ml VOAS.

Chad Walker of Vaquero suggested to Aaron Katona (RWQCB) that we fill one of two 55-gal. drum onsite and sit for one hour. Filled 7- separatory funnels after one hour stand by time, produced water separation was minimal at 100 ml total. Aaron Katona was relieved by Mike McKee (RWQCB).Seven separatory funnels sat for another hour, Extracted 500ml produced water. This sample was used for one TDS analysis at OEC laboratory, Per Mike McKee (RWQCB). Sample time was at 1330 hrs.

Chad Walker suggested to Mike McKee(RWQCB) we fill both drums with crude emulsion, place custody seals on all drum openings (valves, Bung and plugs,). RWQCB approved deviation of sampling procedure, to continue sampling plan for following morning Saturday 06/17/17 at 0800. Custody Seals were place on all openings of two drums on site By OEC, photos were taken by all parties present. (Continued)

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

06/17/17 OEC Project # 1702159-1

OEC arrived on site at 0800hrs Saturday for continuation of sampling event of Ardantz # 506.
Chad Walker and Pancho Munoz of Vaquero Energy witness seals being broken by Pete Alcocer of OEC.
OEC open valve to sample drum to checked Crude oil and water sample separation.
Samples containers were filled directly from 1" ball valve. OEC filled 14 – sample containers to DOGGR Underground Injection Control Analysis requirements. Labels and Chain of Custody filled out completely, Samples place on ice for transportation to OEC Inc. Laboratory.

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Fluid Sampling Log

Date: 06/16/17

Sampler's name: PETE ALCOCER

Company:

Company Sample for: VAQUERO ENERGY

Well/Facility Location: ARDANTZ # 506

Purpose of Sampling: UIC

Well Site Supervisor: SETH HUNTER / CHAD WALKER

Other persons witnessing sampling:
MARK DAVIS - DOGGR
Aaron Katona - CCRWQCB

Time	Activity	Other Information
0855	MI 1741 Pocket Tester pH Meter Calibration	7 pH Buffer = 7.02
	MI 1741 Pocket Tester pH Meter Calibration	4 pH Buffer = 4.00
	MI 1741 Pocket Tester pH Meter Calibration	10 pH Buffer = 10.02
	pH Check Std	7 pH Buffer = 7.05
	2100Q Turbidity Meter Calibration	20 NTU Std = 19.9 NTU
	2100Q Turbidity Meter Calibration	100 NTU Std = 100 NTU
	2100Q Turbidity Meter Calibration	800 NTU Std = 799 NTU
	Turbidity Check Std	10 NTU Std = 9.96 NTU
	Mi 306 EC/TDS/NaCl/Temp Meter Calibration	5000 µS Std = 5,100 µs
	EC Check Std 10,000 = 9,970 µs	10000 µS Std = 9,900 µs
0945	Well / Vessel ID: ARDANTZ #506	API N° # 08322869
	pH : 6.93	
	E.Cond. : 17.53 ms = 17,530 µs	
	TDS Avg. : 12,271 mg/l	
	Turbidity : 584 NTU 3:DIC. = (1752 NTU Results)	
	Temp @ : 31 °C	
	Well ID:	API N°
	pH :	
	E.Cond. : ms	
	TDS Avg. : mg/l	
	Turbidity : NTU	
	Temp @ : °C	

Oilfield Environmental and Compliance

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Phone: (661) 762-9143

CHAIN OF CUSTODY

Company: Vaquero Energy

Address: 15545 Hermosa Road

City/State/ZIP: Bakersfield, CA

Phone: 661-363-7240 Fax: E-mail: cwalker@vaquero energy.com

Report To: Chad Walker Sampler: Pete Alcocer

Report Format(s): FAX- ☐ PDF (std)- ☐ Colt/LUFT EDF- ☐ EDD- ☐

Turnaround Time: 10 Days- ☐ 5 Days (std)- ☒ 3 Days- ☐ 2 Days- ☐ 1 Day- ☐ ASAP- ☐

NOTE: Samples received after 4:00PM will be considered as received the next business day

Project Name/#: Ardantz # 506 / API # 08322869

Site: Ardantz Lease

Special Instructions:

Attention:
shunter@vaqueroenergy.com, cwalker@vaqueroenergy.com ,SCunningham@vaqueroenergy.com, pmunoz@vaquero energy.com,mtownsend@vaqueroenergy.com

OEC Sample ID	Date/Time Sampled	Matrix** (see key)	# of Cont.	Client Sample ID	DOGGR Underground Injection Control Analyses		TDS Field	Turbidity Field	Temperature Field	Electro Conductivity Field	pH Field			Analysis	Preservative	Sample Container
702151-1A-N	06/17/17 @0830	PW	14	Ardantz # 506 (from 2- 55 gal drums on site)	X		X	X	X	X	X					
														Alkalinity /Anions	≤ 6° C	1 x Liter Poly
														Title 22 Metals	HNO_3	1 x 250mL Poly
														BTEX	≤ 6° C	3 x 40mL VOA
														TPH Crude Oil	≤ 6° C	1 x 32oz Amber Glass
														PAHs	≤ 6° C	1 x 32oz Amber Glass
														Methane	≤ 6° C	2 x 40mLVOA
														Uranium	HNO_3	1 x 250ml poly
														Radionuclides AC2	HNO_3	3x 1L Poly
														Tritium	≤ 6° C	1 X 250ml amber glass

Relinquished By: Alcocer Date: 06/17/17 Time: 0930

Received By: OEC FRIDGE Date: 06/17/17 Time: 0930

Relinquished By: OEC FRIDGE Date: 06/18/17 Time: 1050

Received By: Date: 06/18/17 Time: 1050

Relinquished By: Date: Time:

Received By: Date: Time:

Matrix Key**:
A = air / vapor
AQ = aqueous
DW = drinking water
F = filter
GW = ground water
P = product / oil
PW = product water
S = solid / sediment
SW = surface water
WP = wipe
WW = waste water

Comments/PO#:

Ticket # 6701

Site Witness: DOGGR NOT PRESENT

Site Witness: RWQCB NOT PRESENT

x Chad Walker (VAQUERO)

CLIENT: VAQUERO WORK ORDER: 1702159 TEMPERATURE: 2.4 °C SAMPLE RECEIPT

Acceptable Range: 0°C to 6°C [see exception notes below]

COC RECEIVED DATE/TIME: 06/17/17 @ 0930/06/18/17 @ 0850 LOGIN DATE/TIME: 06/18/17 @ 1122 REFRIGERATOR(S): 8, ACZ, 3

SAMPLE TRANSPORT

- [X] OEC Courier/Sampler
- [ ] Delivery (Other than OEC)
- [ ] After-Hours Outside Drop-Off [Brought Inside]
  - Initials/Date/Time: _____
- [ ] Shipment Carrier: _____
  - Tracking #: _____

CUSTODY SEALS [X] None Present

Cooler(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

Sample(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

SAMPLE RECEIPT, CONDITION, PRESERVATION

- [X] Samples Received on Ice Within Temperature Range [Acceptable]
- [ ] Samples Received Outside Temperature Range [Acceptable]
  - [ ] Direct from Field, on Ice
  - [ ] Ambient: Air or Filter Matrix
  - [ ] Received Ambient, Placed on Ice for Transport
  - [ ] Sample Temperature Acceptable for Analysis Requested
- [ ] Samples Received Outside Temperature Range [Exception]
  - [ ] Insufficient Ice or Unknown Cause
  - [ ] See Problem Chain *

(*) PROBLEM CHAIN REQUIRED	YES	NO	N/A	(**) OEC PRES. ID
Completed COC(s) Received With Samples	[X]	[ ]*	[ ]	HNO_3 CONC. 6090365
Correct Container(s) for Analysis Requested	[X]	[ ]*	[ ]	
Container(s) Intact and in Good Condition	[X]	[ ]*	[ ]	
Container Label(s) Consistent with COC	[X]	[ ]*	[ ]	
Proper Preservation on Sample Label(s)	[X]	[ ]	[ ]	
OEC Preservative Added **	[X]	[ ]	[ ]	
VOA Containers Free of Headspace	[X]	[ ]V	[ ]	(V) See Comments below or Problem Chain
Tedlar Bag(s) Free of Condensation	[ ]	[ ]*	[X]	

[ ]* OR [X]V (Comments) Expedited PM Notification [Init/Date/Time]: _____

CONTAINERS, COC CHANGES, AND/OR CORRECTIONS

OEC CONTAINER ID	CONTAINER DESCRIPTION	PRESERVATIVE	CHECKS: Cl⁻, S⁻ &/or pH	MATRIX	COMMENTS	INITIALS
1A-B	2-1L AMBERS	—	—	W	(8)	
1-C	1-1L POLY	—	—		(8)	
1D-F	3-1L POLYS	HNO_3	—		(ACZ)	
1G	1-~~125~~ 250 mL AMBER	—	—		(ACZ)	EA
1H	1-250 mL POLY	HNO_3 **	7		(8) +2.0mL HNO_3 CONC. TO pH <2	EA
1I	1-250 mL POLY	HNO_3 **	7		(8) " "	EA
1J-L	3-40 mL VOAS	—	—		(3)	
1M-N	2-40 mL VOAS	—	—	↓	(8)	

Rev. 02/12/2016

RECEIPT LOGIN BY: EA RECEIPT REVIEWED BY: CKL

Oilfield Environmental & Compliance, Inc.
307 Roemer Way, Suite 300, Santa Maria, Ca 93454
101 Adkisson Way, Taft, Ca 93268
Phone: 805-922-4772 / 661-762-9143
AR@oecusa.com

Date: 06/17/17

Employee Name: PETE ALCOCER

Client Name: VAQUERO ENERGY API # 08322869

Project / Site Name: ARDANTZ # 506 (FROM 2-55 gal DRUMS ON SITE/VAQUERO

Roundtrip Drive Time: 0.75	Roundtrip Drive Mileage: 32
Start Field Time: 0800	Stop Field Time: 0900
Start Field Mileage: 188610	Stop Field Mileage: 188610

Consumables: 1.0 hr prep FOR Sampling

(SATURday Sample EVENT)
STP T.A.T

Decription / Comment: GRABBED 1-Set of UIC Samples (14 CONTAINERS) at ARDANTZ # 506 (FROM 2-55 gal drums on site). PLACE ON ICE TO TRANSPORT TO (OEC, INC LAB) NO TDS is Required FROM THIS Set GRABBED TDS on 06/16/17 at ARDANTZ # 506

Admin Use:

Name:	Initials:	Date:
Total Drive Time:	Total Field Time:	
Total Drive Mileage:	Total Field Mileage:	

TICKET NO. 6701

Oilfield Environmental and Compliance

307 Roemer Way Suite 300, Santa Maria, CA 93454
Phone: (805) 922-4772 Fax: (805) 925-3376 www.oecusa.com

101 Adkisson Way, Taft, CA 93268
Phone: (661) 762-9143

CHAIN OF CUSTODY

Company: Vaquero Energy

Address: 15545 Hermosa Road

City/State/ZIP: Bakersfield, CA

Phone: 661-363-7240 Fax: E-mail: cwalker@vaquero energy.com

Report To: Chad Walker Sampler: Pete Alcocer

Report Format(s): FAX- ☐ PDF (std)- ☐ Colt/LUFT EDF- ☐ EDD- ☐

Turnaround Time: 10 Days- ☐ 5 Days (std)- ☒ 3 Days- ☐ 2 Days- ☐ 1 Day- ☐ ASAP- ☐

NOTE: Samples received after 4:00PM will be considered as received the next business day

Project Name/#: Ardantz # 506 / API # 08322869

Site: Ardantz Lease

Special Instructions:

Attention:
shunter@vaqueroenergy.com, cwalker@vaqueroenergy.com ,SCunningham@vaqueroenergy.com, pmunoz@vaquero energy.com,mtownsend@vaqueroenergy.com

OEC Sample ID	Date/Time Sampled	Matrix** (see key)	# of Cont.	Client Sample ID	DOGGR Underground Injection Control Analyses		TDS Field	Turbidity Field	Temperature Field	Electro Conductivity Field	pH Field			Analysis	Preservative	Sample Container
702151-1A-N	06/17/17 @0830	PW	14	Ardantz # 506 (from 2- 55 gal drums on site)	X		X	X	X	X	X					
														Alkalinity /Anions	≤ 6° C	1 x Liter Poly
														Title 22 Metals	HNO_3	1 x 250mL Poly
														BTEX	≤ 6° C	3 x 40mL VOA
														TPH Crude Oil	≤ 6° C	1 x 32oz Amber Glass
														PAHs	≤ 6° C	1 x 32oz Amber Glass
														Methane	≤ 6° C	2 x 40mLVOA
														Uranium	HNO_3	1 x 250ml poly
														Radionuclides AC2	HNO_3	3x 1L Poly
														Tritium	≤ 6° C	1 X 250ml amber glass

Relinquished By: Alcocer Date: 06/17/17 Time: 0930

Received By: OEC FRIDGE Date: 06/17/17 Time: 0930

Relinquished By: OEC FRIDGE Date: 06/18/17 Time: 1050

Received By: Date: 06/18/17 Time: 1050

Relinquished By: Date: Time:

Received By: Date: Time:

Matrix Key**:
A = air / vapor
AQ = aqueous
DW = drinking water
F = filter
GW = ground water
P = product / oil
PW = product water
S = solid / sediment
SW = surface water
WP = wipe
WW = waste water

Comments/PO#:

Ticket # 6701

Site Witness: DOGGR NOT PRESENT

Site Witness: RWQCB NOT PRESENT

x Chad Walker (VAQUERO)

CLIENT: VAQUERO WORK ORDER: 1702159 TEMPERATURE: 2.4 °C SAMPLE RECEIPT

Acceptable Range: 0°C to 6°C [see exception notes below]

COC RECEIVED DATE/TIME: 06/17/17 @ 0930/06/18/17 @ 0850 LOGIN DATE/TIME: 06/18/17 @ 1122 REFRIGERATOR(S): 8, ACZ, 3

SAMPLE TRANSPORT

- [X] OEC Courier/Sampler
- [ ] Delivery (Other than OEC)
- [ ] After-Hours Outside Drop-Off [Brought Inside]
  - Initials/Date/Time: _____
- [ ] Shipment Carrier: _____
  - Tracking #: _____

CUSTODY SEALS [X] None Present

Cooler(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

Sample(s): [ ] Present, Intact [ ] Present, Not Intact [ ] None

SAMPLE RECEIPT, CONDITION, PRESERVATION

- [X] Samples Received on Ice Within Temperature Range [Acceptable]
- [ ] Samples Received Outside Temperature Range [Acceptable]
  - [ ] Direct from Field, on Ice
  - [ ] Ambient: Air or Filter Matrix
  - [ ] Received Ambient, Placed on Ice for Transport
  - [ ] Sample Temperature Acceptable for Analysis Requested
- [ ] Samples Received Outside Temperature Range [Exception]
  - [ ] Insufficient Ice or Unknown Cause
  - [ ] See Problem Chain *

(*) PROBLEM CHAIN REQUIRED	YES	NO	N/A	(**) OEC PRES. ID
Completed COC(s) Received With Samples	[X]	[ ]*	[ ]	HNO_3 CONC. 6090365
Correct Container(s) for Analysis Requested	[X]	[ ]*	[ ]	
Container(s) Intact and in Good Condition	[X]	[ ]*	[ ]	
Container Label(s) Consistent with COC	[X]	[ ]*	[ ]	
Proper Preservation on Sample Label(s)	[X]	[ ]	[ ]	
OEC Preservative Added **	[X]	[ ]	[ ]	
VOA Containers Free of Headspace	[X]	[ ]V	[ ]	(V) See Comments below or Problem Chain
Tedlar Bag(s) Free of Condensation	[ ]	[ ]*	[X]	

[ ]* OR [X]V (Comments) Expedited PM Notification [Init/Date/Time]: _____

CONTAINERS, COC CHANGES, AND/OR CORRECTIONS

OEC CONTAINER ID	CONTAINER DESCRIPTION	PRESERVATIVE	CHECKS: Cl⁻, S⁻ &/or pH	MATRIX	COMMENTS	INITIALS
1A-B	2-1L AMBERS	—	—	W	(8)	
1-C	1-1L POLY	—	—		(8)	
1D-F	3-1L POLYS	HNO_3	—		(ACZ)	
1G	1-~~125~~ 250 mL AMBER	—	—		(ACZ)	EA
1H	1-250 mL POLY	HNO_3 **	7		(8) +2.0mL HNO_3 CONC. TO pH <2	EA
1I	1-250 mL POLY	HNO_3 **	7		(8) " "	EA
1J-L	3-40 mL VOAS	—	—		(3)	
1M-N	2-40 mL VOAS	—	—	↓	(8)	

Rev. 02/12/2016

RECEIPT LOGIN BY: EA RECEIPT REVIEWED BY: CKL

Oilfield Environmental & Compliance, Inc.
307 Roemer Way, Suite 300, Santa Maria, Ca 93454
101 Adkisson Way, Taft, Ca 93268
Phone: 805-922-4772 / 661-762-9143
AR@oecusa.com

Date: 06/17/17

Employee Name: PETE ALCOCER

Client Name: VAQUERO ENERGY API # 08322869

Project / Site Name: ARDANTZ # 506 (FROM 2-55 gal DRUMS ON SITE/VAQUERO

Roundtrip Drive Time: 0.75	Roundtrip Drive Mileage: 32
Start Field Time: 0800	Stop Field Time: 0900
Start Field Mileage: 188610	Stop Field Mileage: 188610

Consumables: 1.0 hr prep FOR Sampling

(SATURday Sample EVENT)
STP T.A.T

Decription / Comment: GRABBED 1-Set of UIC Samples (14 CONTAINERS) at ARDANTZ # 506 (FROM 2-55 gal drums on site). PLACE ON ICE TO TRANSPORT TO (OEC, INC LAB) NO TDS is Required FROM THIS Set GRABBED TDS on 06/16/17 at ARDANTZ # 506

Admin Use:

Name:	Initials:	Date:
Total Drive Time:	Total Field Time:	
Total Drive Mileage:	Total Field Mileage:	

TICKET NO. 6701

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

Vaquero Energy / Ardantz Lease UIC
DOGGR Injection and Formation Waters Field Procedures

Sample Dates: 06/16/17 OEC Project # 1702142-1 & 06/17/17 OEC Project # 1702159
Sample Tech: Pete Alcocer
Sampling Locations: Ardantz # 506 UIC API # 08322869

SCOPE/SAFETY

Scope: The following is a summary of OEC's field sampling procedures for collection of oil & water directly from the well head. Procedures may be subject to change due to variability of sampling and matrix conditions at each unique location.

Safety Procedures: All client specific safety procedures/policies will be reviewed and understood before a technician begins work. JSA documentation shall be filled out and signed by represented parties. The technician shall confirm with the client the project information required for the Chain of Custody (COC) document including project ID, sample point ID, report to personnel, turnaround time (TAT) and any additional pertinent information (i.e. API numbers, etc.). Where possible, the technician should pre-label sample containers for the testing requested prior to sampling.

PPE: Proper personal protective equipment (PPE) for oilfield working conditions is required for the duration of the sampling event and at all times while on-site. These include full flame resistant (FR) clothing, H2S monitor, steel toe work boots, hard hat, chemical/heat resistant gloves, safety glasses, and any additional equipment field conditions may require (i.e. face shield, heat protection, raingear, etc.).

Caution: Well head fluids have not gone through vapor separation and could contain high levels of entrained H2S. Use discretion when opening valves and pulling samples. Stand upwind and utilize equipment that allows for directional flow of samples to avoid potential exposure. Utilize proper equipment when operating gate valves and avoid using gate valves as the primary flow control for sampling. Implement a ball valve manifold for sampling whenever feasible for optimum flow control. Well head sample points include moving parts and tripping hazards that must be recognized and identified prior to commencing work.

EQUIPMENT / SAMPLING PROCEDURES

- Stainless steel manifold w/ ball valve (3/8", 1/4", 1/2")
- Separatory funnel(s) with ring stand
- Five gallon metal bucket with ring top lid
- Grounding cables
- Sampling containers with required preservation as needed (various)
- Ice chest(s)/Coolers + ice
- IR Temperature Gun
- Field sampling instrumentation (pH, Turbidity, EC, Temp, TDS)

Sampling: Using the temperature gun, scan the working temperature of the sampling point to determine the temperature of the fluids. Adjust PPE selection as necessary based on observed temperature.

Identify the sampling point if not previously established/labeled. This is typically a production flow line directly off of the well head. Double check that all valves are closed prior to removing gauge or plug at determined sampling point. Once confirmed closed, slowly remove gauge, listening for hissing of pressure release. If hissing does not die down or pressure from partially removed gauge does not drop, tighten gauge back on and re-check valves. It the valves appear to be closed, identify an alternate sampling point where pressure can be controlled.

Once gauge is safely removed from the sampling point, if necessary to control excess pressure, connect a stainless steel manifold with a ball valve, ensuring that ball valve is closed before pulling required samples. Open the gate valve and then place the 5 gallon bucket under ball valve; slowly open the ball valve and purge the sample fluid into the bucket. **Important**: A grounding cable will be used to connect the metal bucket to the well head. Establish where the waste/purge fluids will be disposed of prior to this step.

Once the lines have been purged, well fluids are flowed slowly into a separatory funnel, controlling flow with a secondary ball valve (double block and bleed) if necessary. Time is allowed for phase separation of the water. The water phase is then flowed into the proper sample container by slowly opening the stop cock at the bottom of the separatory funnel. **Note:** Extra caution is observed when adding sample to a container having an acid preservative such as Hydrochloric Acid. The water is introduced slowly, allowing it to run down the inside wall of the sampling container to avoid splashing. Fumes that may be created during this process are mitigated by staying upwind of the vapors.

Field Testing: The following field testing is performed immediately using an aliquot of the well fluid collected in the above procedure:

1. pH
2. Electro Conductivity
3. Calculated TDS
4. Temperature
5. Turbidity

All field data is recorded on the Fluid Sampling Log Sheet and will include the following: Client, Facility, Sample ID, Sample Date and Time, Agency presence, OEC Sampling technician and Field notes.

Sample Storage / Transport: Once samples have been placed in the proper containers, they are placed into a cooler on ice and transported to the laboratory.

Matrix Variability / Water Content: Due to the variability of the oil/fluid matrix from well to well, it is difficult to know the exact ratio prior to well head sampling. Since the fluids will likely be in emulsion, it is recommended that the fluid sample be placed directly into a separatory funnel to allow for matrix separation by gravity. Due to the low water content of some well / aquifer locations, special measures must be used to obtain sufficient sample volumes. In these cases, a large amount of well fluids must first be flowed into a primary container such as a 55 gallon drum, sealed and allowed to separate (Petroleum from Water) for an unspecified amount of time. Post phase separation, the water portion may be pumped out of the primary container and put into the appropriate bottle ware for the required analyses.

Site Specific Information / Deviation:

06/16/17 OEC# 1702142-1 : Sampling event for Ardantz # 506 , field instruments were calibrated on site at 0855hrs. DOGGR and RWQCB arrived on site to witness sampling event. Filled four separatory funnels directly from wellhead, extracted approximately 300 ml of produced water. Analyzed conductivity, pH , turbidity , temperature and TDS by calculation. See attached log sheet for results. Continued to fill separatory funnels to begin filling sample containers for UIC required analysis. Sample separation of crude emulsion and produced water were decreasing, within one and half hours four separatory funnels produced only 2-250ml poly's, 1-250 ml amber, 5-40ml VOAS.

Chad Walker of Vaquero suggested to Aaron Katona (RWQCB) that we fill one of two 55-gal. drum onsite and sit for one hour. Filled 7- separatory funnels after one hour stand by time, produced water separation was minimal at 100 ml total. Aaron Katona was relieved by Mike McKee (RWQCB).Seven separatory funnels sat for another hour, Extracted 500ml produced water. This sample was used for one TDS analysis at OEC laboratory, Per Mike McKee (RWQCB). Sample time was at 1330 hrs.

Chad Walker suggested to Mike McKee(RWQCB) we fill both drums with crude emulsion, place custody seals on all drum openings (valves, Bung and plugs,). RWQCB approved deviation of sampling procedure, to continue sampling plan for following morning Saturday 06/17/17 at 0800. Custody Seals were place on all openings of two drums on site By OEC, photos were taken by all parties present. (Continued)

OILFIELD ENVIRONMENTAL & COMPLIANCE, INC.

06/17/17 OEC Project # 1702159-1

OEC arrived on site at 0800hrs Saturday for continuation of sampling event of Ardantz # 506.
Chad Walker and Pancho Munoz of Vaquero Energy witness seals being broken by Pete Alcocer of OEC.
OEC open valve to sample drum to checked Crude oil and water sample separation.
Samples containers were filled directly from 1" ball valve. OEC filled 14 – sample containers to DOGGR Underground Injection Control Analysis requirements. Labels and Chain of Custody filled out completely, Samples place on ice for transportation to OEC Inc. Laboratory.

307 ROEMER WAY, SUITE 300 | SANTA MARIA | CA 93454 | (805)922-4772 | FAX (805)925-3376 | ELAP# 2438
www.oecusa.com

VAQUERO
ENERGY

RECEIVED
JUN 16 2017
DIVISION OF OIL, GAS AND
GEOTHERMAL RESOURCES
COASTAL-ORCUTT

June 16, 2017

Mr. Mark Davis
Division of Oil, Gas & Geothermal Resources
195 S. Broadway, Suite 101
Orcutt, CA 93454

Mr. Aaron Katona
Central Coast Regional Water Quality Control Board
895 Aerovista Ln, Suite 100
San Luis Obispo, CA 93401

RE: Sisquoc S1b Native Water Sample from well Ardantz 506 (API 083-22869)
Cat Canyon Oil Field, Sisquoc Area, Santa Barbara County, CA

Mr. Davis and Mr. Katona,

Vaquero Energy has requested that the Central Coast RWQCB and DOGGR District 3 witness the sampling of a water sample from well Ardantz 506 (API 083-22869) in order to prove that the S1b sand member of the Upper Sisquoc Formation on the Vaquero Leased Lands is not an USDW. The sampling will be carried out by OEC, a certified third party lab, in accordance with "Water Sampling Protocols and Analyses of Injection and Formation Waters" Notice to Operators issued by DOGGR on May 18, 2015 and amended June 8, 2015. In the event that the required 2 to 3 liters of water is unnatainable, a modified protocol may be required. The Sisquoc S1b sand member is oil productive on the Tunnell, Ardantz, Dodge, and Dias lands leased by Vaquero Energy.

The surface of the well from which the sample will be obtained is located on the Ardantz lease and is only completed in the Sisquoc S1b sand member. Attached are a wellbore diagram, well summary report and well history showing that the well is only completed in the aforementioned zone. The Ardantz 506 has been steamed a total of four times since it was drilled, as shown in Table 1 below, and corroborated through available public data on the DOGGR website. Total volumes of injectate and produced fluid are also tabulated in Table 1.

Date:	Volume:			
3/13/2015	10,400		**Steam Injected (bbls):**	36,779
10/9/2015	6,217		**Oil Produced (bbls):**	24,252
2/16/2016	10,039		**Water Produced (bbls):**	17,114
10/25/2016	10,123			

Table 1: Steam Cycle Volumes

Results of Sample received 7/31/17
in proj file

64

The steam cycle prior to this sampling event occurred on October 25, 2016 and a total of 10,123 bbls of steam was injected. In order to prevent fouling of the steam generator equipment, feed water must be softened and removed of any impurities prior to being pumped through the steam generators. Attached is an analysis of the steam generator feed water, or injectate, and shows a Total Dissolved Solids value of 1700 mg/L.

Vaquero Energy routinely acquires well tests on each well and the last two months of data are shown in Table 2 below.

Date:	Gross Fluid:	LCO:	Oil:	Water:	Water Cut:	Casing PSI:	Tubing PSI	Fluid Temp:
6/8/2017	57	12	21.1	23.9	42.00%	0	180	87
5/27/2017	55	12	23.2	19.8	36.00%	0	160	82
5/11/2017	58	10	26.5	21.5	37.00%	0	180	90
4/30/2017	56	10	23	23	41.00%	0	180	93
4/24/2017	64	10	12.4	41.6	65.00%	0	180	69
4/20/2017	65	10	28.4	26.6	41.00%	0	200	76
4/16/2017	77	10	37.7	29.3	38.00%	0	140	86
4/11/2017	65	10	23.8	31.2	48.00%	0	160	86
4/6/2017	64	10	29.7	24.3	38.00%	0	160	87
4/2/2017	66	10	25.6	30.4	46.00%	0	160	84

Table 2: Ardantz 506 Well Tests for Prior Two Months

Similarly, Vaquero Energy also requests that the Central Coast RWQCB and DOGGR District 3 witness a sampling of the water source well, "Ardantz Fresh Water Well," located near the Ardantz 500 series wells to provide data that shows vertical confinement of injectate into the Sisquoc S1b sand member is being achieved. Furthermore, a temperature survey conducted April 6, 2015, attached, shows that there is in fact, vertical confinement which protects the fresh water bearing sands from 1,400' measured depth to surface, from injectate.

Vaquero Energy appreciates both the Central Coast RWQCB and DOGGR District 3 witnessing the sampling of these two wells and is happy to answer any questions or concerns that may arise during or after the sampling events.

If you have any questions, please contact me at the below email address or phone number.

Sincerely,

Stephen M. Cunningham
Petroleum Engineer
Vaquero Energy
4099 Orcutt Garey Rd. Santa Maria, CA 93454
(661) 747-9631
scunningham@vaqueroenergy.com

Last Updated: 6/14/2017 05:18

Field Name	Lease Name	Well No.	County	State	API No.
Cat Canyon	Ardantz	506	Santa Barbara	California	04083228690000

Version	Version Tag	Spud Date	Comp. Date	GL (ft)	KB (ft)
1		12/8/2014	12/12/2014	491.0	506.0

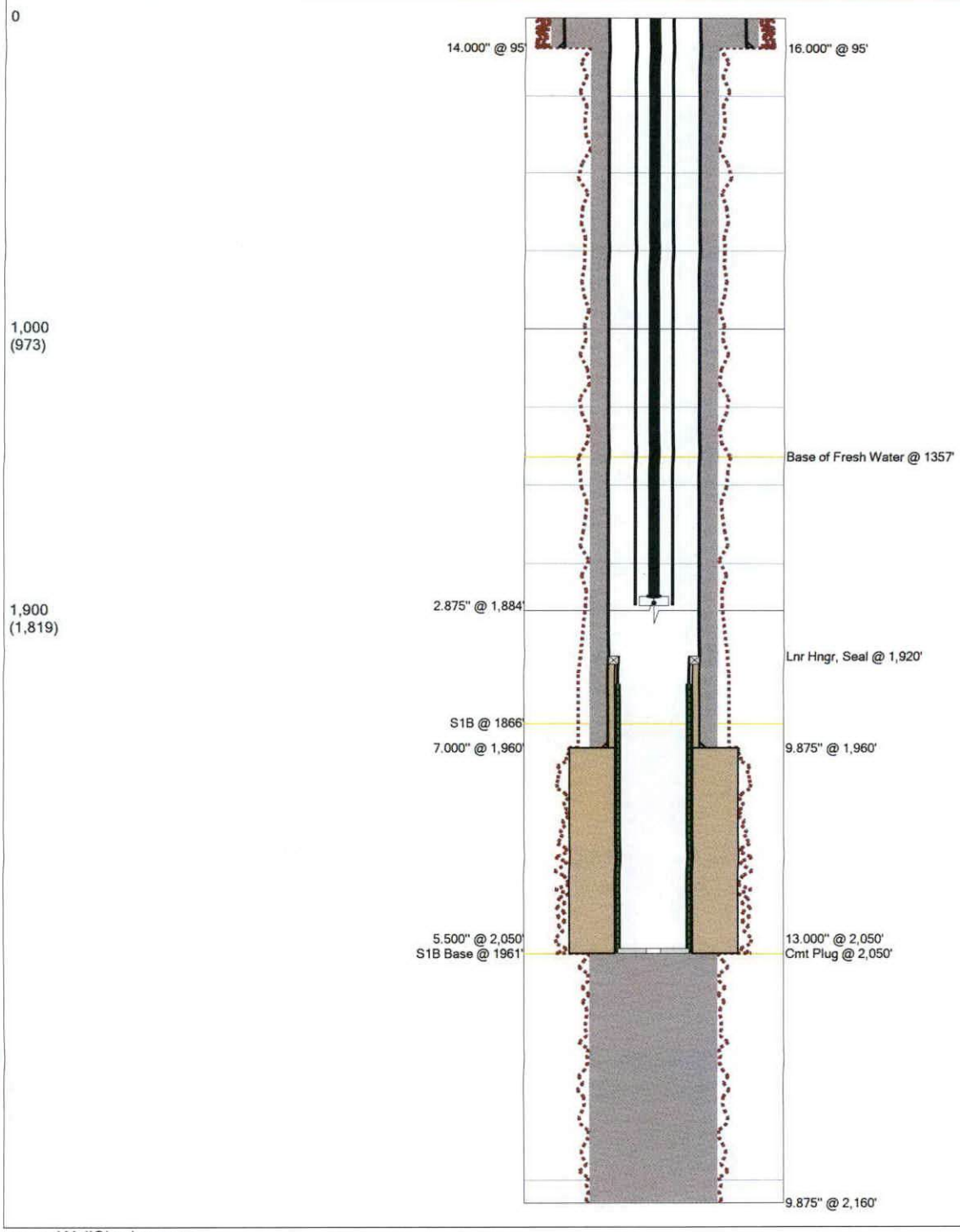
Section	Township/Block	Range/Survey	Dist. N/S (ft)	N/S Line	Dist. E/W (ft)	E/W Line	Footage From
2	9N	33W	2245	FSL	2020	FEL	SE Corner of Section 2

Operator	Well Status	Latitude	Longitude	Prop Num
Vaquero Energy, Inc.	Active	34.885269	-120.319311	

Other 1	Other 2	Other 3	Other 4

Last Updated	Prepared By	Updated By
06/14/2017 5:18 PM	ryarger	scunningham

Additional Information



RECEIVED

JUN 16 2017

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES
COASTAL-ORCUTT

102

Oilfield Environmental and Compliance, INC.

Vaquero - Hermosa Rd, Bakersfield	Project: Tunnell Lease	
4700 Stockdale HWY, Suite120	Project Number: Tunnell Water Plant Project	**Reported:**
Bakersfield CA, 93309	Project Manager: Loren Maly	08-Jul-16 15:39

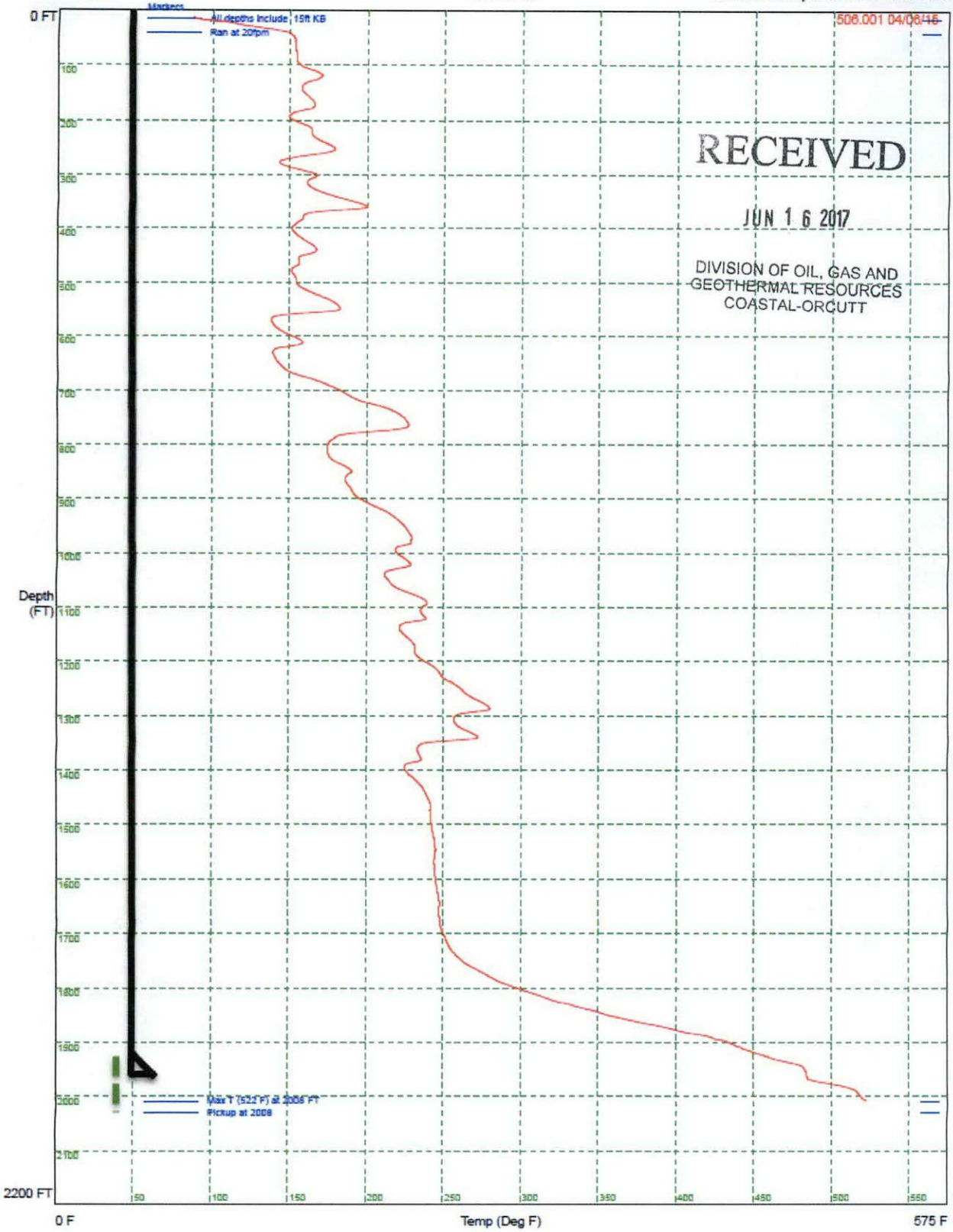
Feed Water
1602350-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Oilfield Environmental and Compliance									
Wet Chemistry by EPA or APHA Standard Methods									
Salinity	**1.3**	1.0	Salinity units	1	B6F0705	30-Jun-16	30-Jun-16	SM 2520B	
Total Dissolved Solids	**1700**	10	mg/L	"	B6F0703	30-Jun-16	30-Jun-16	2540C	
Anions by EPA Method 300.0									
Chloride	**310**	80	mg/L	200	B6F0692	30-Jun-16	30-Jun-16	EPA 300.0	
Total Metals by EPA 6000/7000 Series Methods									
Iron	**0.25**	0.050	mg/L	1	B6G0067	05-Jul-16	07-Jul-16	EPA 6010B	
Potassium	**0.55**	1.0	"	"	"	"	"	"	J
Silica (SiO2)	**110**	0.21	"	"	"	"	"	"	
Organic Acids by HPLC									
Formic Acid	ND	5.00	mg/L	1	B6G0027	01-Jul-16	01-Jul-16	HPLC/UV	
Acetic Acid	**54.5**	5.00	"	"	"	"	"	"	
Propionic Acid	ND	5.00	"	"	"	"	"	"	
Butyric & Isobutyric Acid	ND	10.0	"	"	"	"	"	"	
Isovaleric Acid	ND	5.00	"	"	"	"	"	"	
Valeric Acid	ND	5.00	"	"	"	"	"	"	
Isocaproic Acid	ND	5.00	"	"	"	"	"	"	
Caproic Acid	ND	5.00	"	"	"	"	"	"	
Heptanoic Acid	**45.3**	5.00	"	"	"	"	"	"	

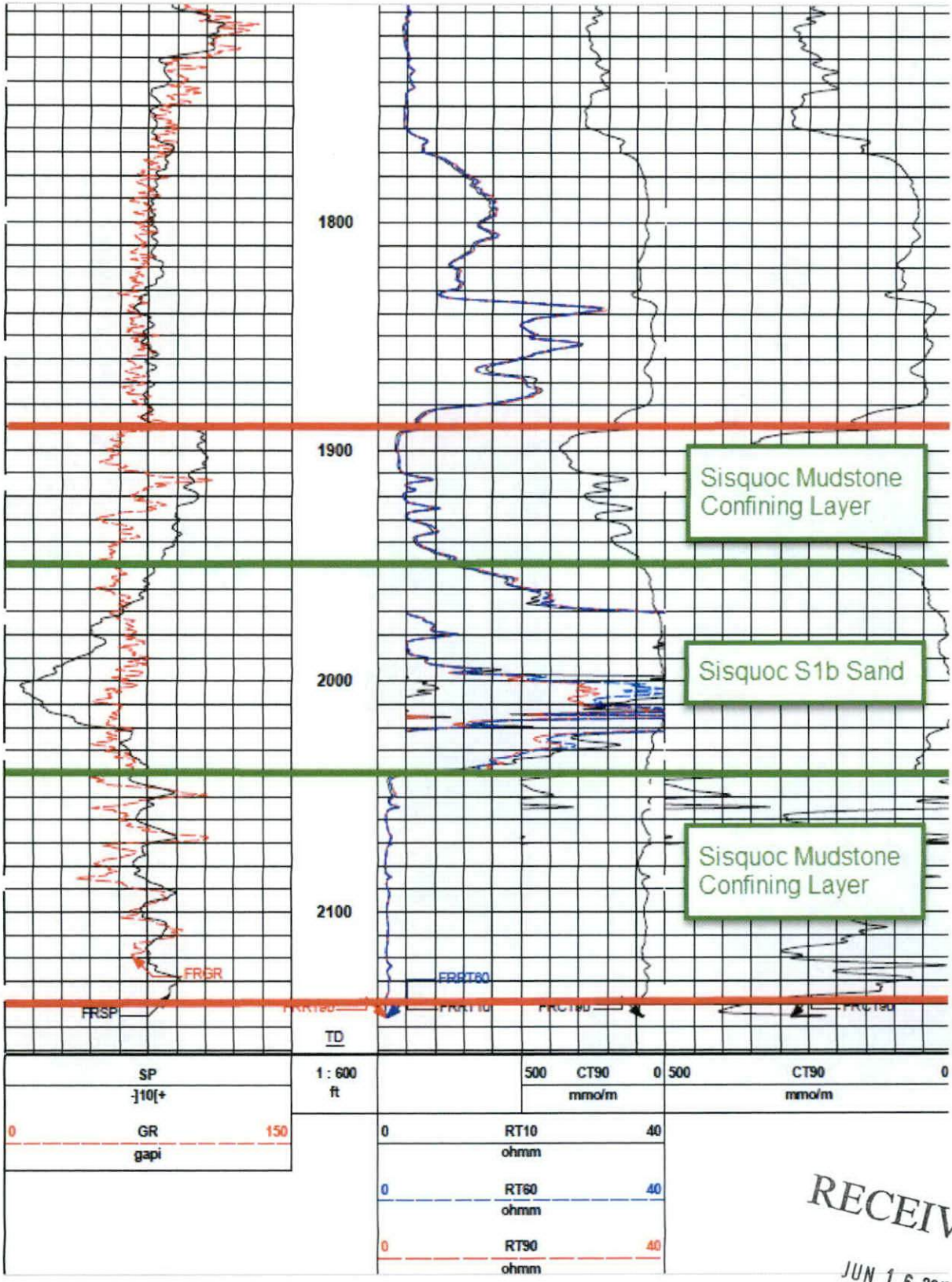
Vaquero Energy
Ardantz

506.001
04/06/15

Thermal Tech
Bakersfield, CA (661-331-5131)
Contact Temperature Tool & CCL



60



State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
Department of Conservation
Division of Oil, Gas, and Geothermal Resources – District 3
195 South Broadway • Suite 101
Orcutt, CA 93455
(805) 937-7246 • FAX (805) 937-0673

On June 16, 2017, MSD, EG, JS, JL, RE, and TP from DOGGR observed water sampling from well Ardantz 506 (API 083-22869) operated by Vaquero Energy, Inc in Cat Canyon field. Observed water sampling techniques by OEC appeared appropriate; the division left prior to the completion of the sampling due to prior commitment. Waiting on water sample lab report from OEC for future work.

Prepared by Justin LaForge – 6/16/17

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
Department of Conservation
Division of Oil, Gas, and Geothermal Resources – District 3
195 South Broadway • Suite 101
Orcutt, CA 93455
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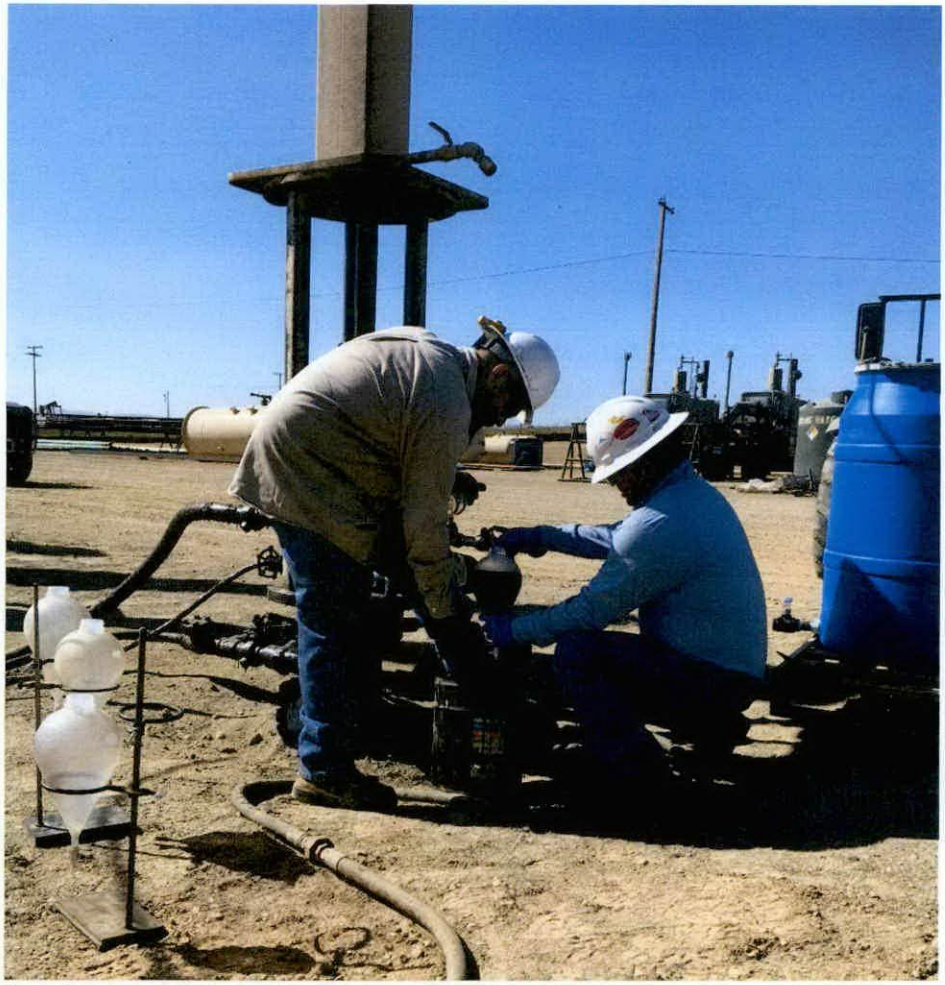

Water sampling from well Ardantz 506 (API 083-22869) by OEC on 6/16/17. Witnessed by DOGR. JL

Water sampling from well Ardantz 506 (API 083-22869) by OEC on 6/16/17. Witnessed by DOGR. JL

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES
CHECK LIST - RECORDS RECEIVED AND WELL STATUS

COMPANY Vaquero Energy, Inc. WELL NO "Ardantz" 506
API NO. 083-22869 SEC. 2 ,T. 9N , R. 33W , S.B.. B.&M.
COUNTY Santa Barbara FIELD Cat Canyon

RECORDS RECEIVED	DATE
Well Summary (Form OG100)	1-6-15
History (form OG103)	1-6-15
Directional Survey	1-6-15
Core Record and/or SWS	
Other:	
Electric logs:	
Array Comp. True Resistivity	1-6-15
Above log emailed/saved under API #	

STATUS

OG, SC NEW
(Date)

Engineer's Check List

- ✓ Summary, History, & Core Record
- ✓ Directional Survey
- ✓ Logs
- ✓ Operator's Name
- ✓ Signature
- ✓ Well Designation
- ✓ Location from NOI to Summary Loc.
- ✓ GPS Location Received
- ✓ Entered in Computer
- ✓ Notice
- ✓ "T" Reports
- ____ Casing Record
- ____ Plugs (Sfc. Plg Date)____
- ____ Final Sfc. Insp Date ____
- ✓ Production/Injection

Clerical Check List

Form OGD121
- ✓ Location change (OG165) * OK Pd
- ____ Elevation change (GD165)
- ____ Final Letter (OG159)
- ____ Release of Bond (OGD150)
- ____ Abd ____ in WSS ____
- ____ Notice of Records Due (OGD170)
- ✓ Request:

* location changed from lat/long recvd. 34.8859773, 120.3192613
~~on NOI, to Lat/Long recvd on Summary~~ ~~34.885269, 120.319311~~ OK

____ Scan Records

Computer

- ✓ CalWims Drill Card
- ____ Idle Well Status Change
(F: Idle/Idle Wells 2000/Idle Wells Master CalWims)
- ✓ WSS Code or Status Changes
- ____ Map Work:
- ✓ Follow Up: ~~6 Mos Prod Sept '15~~ 11 11 11
- ✓ Hold for:

Records Approved CP 3/17/15

OGD2 Cyc Steam Days
16,617 29
Oil
Le685 164

164
29
193 days

55

VAQUERO ENERGY

RECEIVED
JAN - 6 2015
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

VAQUERO

TUNNELL LEASE
SEC. 2, T9N, R33W
ARDANTZ 506
ARDANTZ 506

Survey: Survey #1

Final Survey Report

18 December, 2014

GEOGUIDANCE
DRILLING SERVICES, INC.

Company:	VAQUERO	**Local Co-ordinate Reference:**	Well ARDANTZ 506
Project:	TUNNELL LEASE	**TVD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Site:	SEC. 2, T9N, R33W	**MD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Well:	ARDANTZ 506	**North Reference:**	Grid
Wellbore:	ARDANTZ 506	**Survey Calculation Method:**	Minimum Curvature
Design:	ARDANTZ 506	**Database:**	VAQUERO

Project TUNNELL LEASE, Santa Barbara County, CA

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	California V 405		

Site SEC. 2, T9N, R33W

Site Position:		**Northing:**	511,000.00 usft	**Latitude:**	34.882151
From:	Map	**Easting:**	1,305,000.00 usft	**Longitude:**	-120.317533
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-1.32 °

Well ARDANTZ 506, SUR. N 512147.50 E 1304790.53

Well Position	**+N/-S**	0.00 usft	**Northing:**	512,147.50 usft	**Latitude:**	34.885290
	+E/-W	0.00 usft	**Easting:**	1,304,790.53 usft	**Longitude:**	-120.318320
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	506.00 usft	**Ground Level:**	491.00 usft

Wellbore ARDANTZ 506

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/8/2014	12.85	59.15	47,313

Design ARDANTZ 506

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	15.38

Survey Program **Date** 12/18/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
110.00	2,160.00	Survey #1 (ARDANTZ 506)	MWD	MWD - Standard

Company:	VAQUERO	**Local Co-ordinate Reference:**	Well ARDANTZ 506
Project:	TUNNELL LEASE	**TVD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Site:	SEC. 2, T9N, R33W	**MD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Well:	ARDANTZ 506	**North Reference:**	Grid
Wellbore:	ARDANTZ 506	**Survey Calculation Method:**	Minimum Curvature
Design:	ARDANTZ 506	**Database:**	VAQUERO

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	DLeg (°/100usft)	V. Sec (usft)
0.00	0.00	0.00	0.00	506.00	0.00	0.00	512,147.50	1,304,790.53	0.00	0.0
110.00	1.19	357.22	109.99	396.01	1.14	-0.06	512,148.64	1,304,790.47	1.08	1.0
140.00	1.91	356.19	139.98	366.02	1.95	-0.10	512,149.45	1,304,790.43	2.40	1.85
171.00	2.64	357.83	170.96	335.04	3.18	-0.17	512,150.68	1,304,790.36	2.36	3.02
202.00	3.65	358.46	201.91	304.09	4.88	-0.22	512,152.38	1,304,790.31	3.26	4.65
233.00	4.22	2.01	232.84	273.16	7.01	-0.21	512,154.51	1,304,790.32	2.00	6.70
264.00	5.32	357.31	263.73	242.27	9.58	-0.23	512,157.08	1,304,790.30	3.76	9.18
294.00	6.09	352.42	293.58	212.42	12.55	-0.51	512,160.05	1,304,790.02	3.03	11.96
325.00	6.86	356.34	324.38	181.62	16.03	-0.84	512,163.53	1,304,789.69	2.86	15.23
356.00	7.82	358.01	355.13	150.87	19.98	-1.03	512,167.48	1,304,789.50	3.17	18.99
387.00	8.61	0.38	385.81	120.19	24.41	-1.09	512,171.91	1,304,789.44	2.77	23.25
419.00	9.51	2.42	417.41	88.59	29.45	-0.96	512,176.95	1,304,789.57	2.99	28.14
450.00	10.20	4.64	447.95	58.05	34.74	-0.63	512,182.24	1,304,789.90	2.54	33.33
481.00	10.90	6.58	478.43	27.57	40.39	-0.08	512,187.89	1,304,790.45	2.53	38.92
513.00	11.82	9.54	509.80	-3.80	46.63	0.81	512,194.13	1,304,791.34	3.40	45.17
544.00	12.88	11.32	540.08	-34.08	53.15	2.02	512,200.65	1,304,792.55	3.63	51.7
576.00	14.06	11.63	571.20	-65.20	60.45	3.50	512,207.95	1,304,794.03	3.69	59.21
604.00	14.64	12.53	598.33	-92.33	67.24	4.95	512,214.74	1,304,795.48	2.22	66.14
636.00	15.52	12.00	629.23	-123.23	75.37	6.72	512,222.87	1,304,797.25	2.78	74.45
668.00	16.08	14.18	660.02	-154.02	83.86	8.70	512,231.36	1,304,799.23	2.55	83.16
700.00	16.88	16.83	690.70	-184.70	92.60	11.13	512,240.10	1,304,801.66	3.43	92.23
731.00	17.80	17.78	720.29	-214.29	101.42	13.88	512,248.92	1,304,804.41	3.11	101.47
763.00	18.94	18.14	750.66	-244.66	111.01	16.99	512,258.51	1,304,807.52	3.58	111.54
795.00	19.42	17.74	780.89	-274.89	121.01	20.23	512,268.51	1,304,810.76	1.56	122.05
826.00	19.63	19.04	810.10	-304.10	130.85	23.50	512,278.35	1,304,814.03	1.56	132.39
858.00	20.04	18.71	840.21	-334.21	141.12	27.01	512,288.62	1,304,817.54	1.33	143.23
887.00	20.00	18.05	867.45	-361.45	150.54	30.14	512,298.04	1,304,820.67	0.79	153.14

Company:	VAQUERO	**Local Co-ordinate Reference:**	Well ARDANTZ 506
Project:	TUNNELL LEASE	**TVD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Site:	SEC. 2, T9N, R33W	**MD Reference:**	ARDANTZ 506 @ 506.00usft (BARB 77)
Well:	ARDANTZ 506	**North Reference:**	Grid
Wellbore:	ARDANTZ 506	**Survey Calculation Method:**	Minimum Curvature
Design:	ARDANTZ 506	**Database:**	VAQUERO

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	DLeg (°/100usft)	V. Sec (usft)
918.00	20.26	18.87	896.56	-390.56	160.66	33.52	512,308.16	1,304,824.05	1.24	163.8
981.00	20.30	17.78	955.65	-449.65	181.39	40.38	512,328.89	1,304,830.91	0.60	185.6
1,045.00	20.30	16.77	1,015.68	-509.68	202.59	46.98	512,350.09	1,304,837.51	0.55	207.79
1,108.00	20.83	18.84	1,074.67	-568.67	223.65	53.75	512,371.15	1,304,844.28	1.43	229.90
1,171.00	20.83	17.04	1,133.55	-627.55	244.97	60.65	512,392.47	1,304,851.18	1.02	252.28
1,234.00	20.57	16.90	1,192.48	-686.48	266.27	67.15	512,413.77	1,304,857.68	0.42	274.54
1,298.00	20.26	17.08	1,252.46	-746.46	287.62	73.67	512,435.12	1,304,864.20	0.49	296.85
1,393.00	20.08	17.50	1,341.64	-835.64	318.89	83.40	512,466.39	1,304,873.93	0.24	329.59
1,485.00	19.69	18.97	1,428.15	-922.15	348.61	93.19	512,496.11	1,304,883.72	0.69	360.84
1,579.00	19.25	17.65	1,516.78	-1,010.78	378.35	103.04	512,525.85	1,304,893.57	0.66	392.13
1,642.00	19.64	17.48	1,576.18	-1,070.18	398.35	109.37	512,545.85	1,304,899.90	0.63	413.09
1,705.00	19.69	19.06	1,635.51	-1,129.51	418.48	116.01	512,565.98	1,304,906.54	0.85	434.26
1,801.00	19.34	18.14	1,725.99	-1,219.99	448.87	126.24	512,596.37	1,304,916.77	0.49	466.28
1,861.00	19.20	15.56	1,782.63	-1,276.63	467.82	131.98	512,615.32	1,304,922.51	1.44	486.07
1,924.00	19.25	16.33	1,842.12	-1,336.12	487.76	137.68	512,635.26	1,304,928.21	0.41	506.81
1,984.00	19.60	16.42	1,898.70	-1,392.70	506.91	143.31	512,654.41	1,304,933.84	0.59	526.76
2,044.00	19.62	16.58	1,955.22	-1,449.22	526.22	149.03	512,673.72	1,304,939.56	0.10	546.90
2,100.00	19.73	16.51	2,007.95	-1,501.95	544.29	154.40	512,691.79	1,304,944.93	0.20	565.75
2,160.00	19.73	16.51	2,064.43	-1,558.43	563.71	160.15	512,711.21	1,304,950.68	0.00	586.00

Checked By: _____ Approved By: _____ Date: _____

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VAQUERO ENERGY

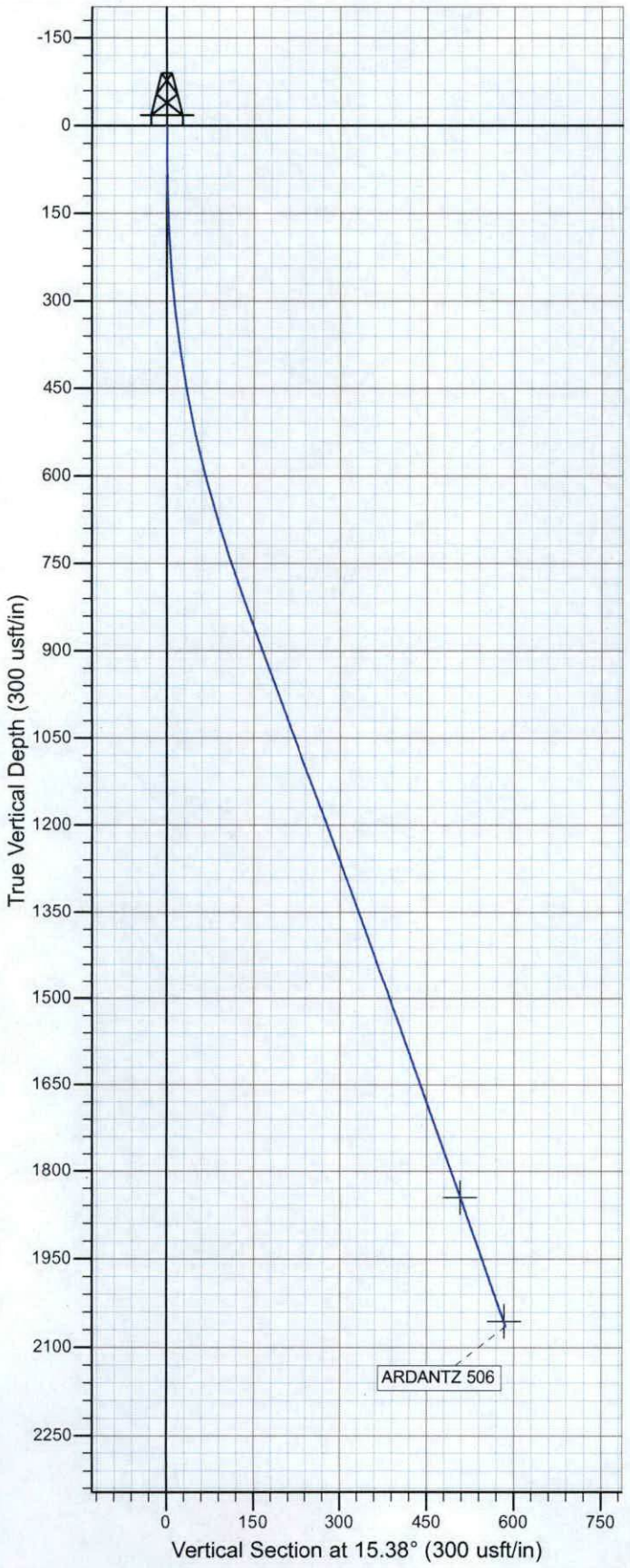
VAQUERO

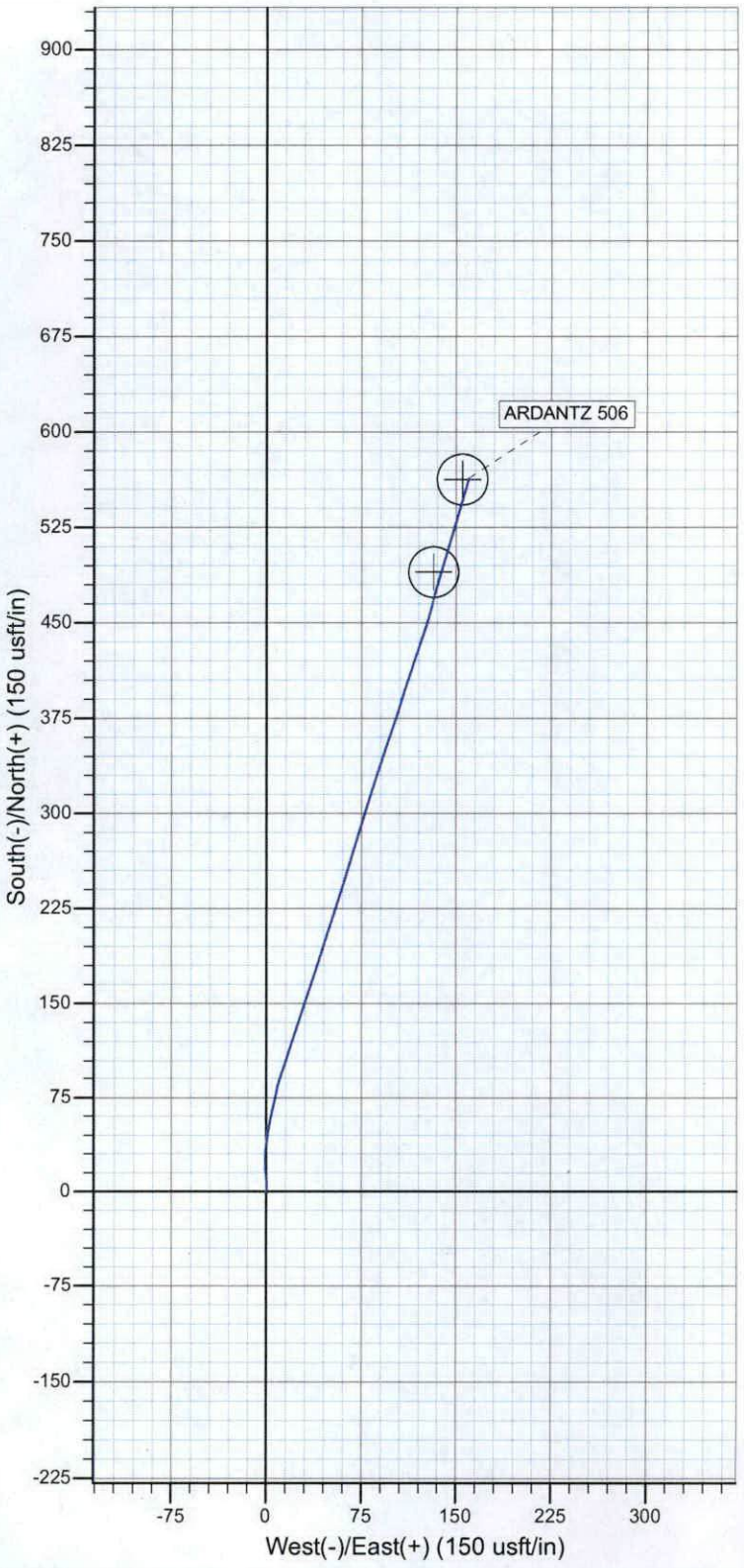
Project: TUNNELL LEASE
Site: SEC. 2, T9N, R33W
Well: ARDANTZ 506
Wellpath: ARDANTZ 506
Design: ARDANTZ 506

Azimuths to Grid North
True North: 1.32°
Magnetic North: 14.17°

Magnetic Field
Strength: 47313.4snT
Dip Angle: 59.15°
Date: 12/8/2014
Model: IGRF2010

GEOGUIDANCE DRILLING SERVICES, INC.





FINAL PLOT

DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
195 S Broadway, Suite 101 Orcutt, CA 93455-4655
Phone: (805) 937-7246 Fax: (805) 937-0673

REPORT OF WELL CORRECTION OR CANCELLATION

Orcutt, California
March 18, 2015

Matt Smith
Vaquero Energy, Inc.
15545 Hermosa Road
Bakersfield, CA 93307-9477

In accordance with **a Well Summary Report dated 12/29/2014 and received 1/6/2015** the following changes pertaining to your well **"Ardantz" 506**, A.P.I. No. **083-22869**, **Cat Canyon** field, **Santa Barbara** County, Section **2**, T.**9N**, R. **33W**, **SB** B.&M., are being made in our records:

The corrected location is latitude 34.885269°, longitude -120.319311° (NAD83).

Steven Bohlen
State Oil and Gas Supervisor

By _____
Patricia A. Abel
District Deputy

CP:pd

cc: Well file
Chrono
Santa Barbara County

NATURAL RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

WELL SUMMARY REPORT

API No. 083-22869

Operator	Well				
Vaquero Energy	Ardantz 506				
Field (and Area, if applicable)	County	Sec.	T.	R.	B.&M.
Cat Canyon	Santa Barbara	2	9N	33W	SB

Location of well (Give surface location from property or section corner, street center line)
Fr/Southeast cor Sec 2, 9N/33W SBB&M 2020' West and 2245' North @ right angles

Elevation of ground above sea level: 491'

Lat./Long. in decimal degrees, to six decimal places, NAD 83 format: Lat: 34.885269 Long: -120.319311

Was the well directionally drilled? ☒ Yes ☐ No If yes, show coordinates (from surface location) and true vertical depth at total depth. 2064'
173 E & 561' N from surface location

Commenced drilling (date)	Total depth (1st hole)	(2nd)	(3rd)	Depth measurements taken from top of:
12/8/2014	2160'			☐ Derrick Floor ☐ Rotary Table ☒ Kelly Bushing
Completed drilling (date) 12/12/2014				Which is 15' feet above ground.

Commenced production/injection (date)	Present effective depth 2050'	GEOLOGICAL MARKERS	DEPTH
Production mode: ☐ Flowing ☒ Pumping ☐ Gas lift	Junk? Describe: Cement Plug from 2160-2050'	SISQUOC	1953'
Name of production/injection zone(s) SISQUOC SANDS		Formation and age at total depth SISQUOC	Base of fresh water

	Clean Oil (bbl per day)	API Gravity (clean oil)	Percent Water (including emulsion)	Gas (Mcf per day)	Tubing Pressure	Casing Pressure
Initial Production						
Production After 30 days						

CASING AND CEMENTING RECORD (Present Hole)

Size of Casing (Inches API)	Top of Casing	Depth of Shoe	Weight of Casing	Grade and Type of Casing	New (N) or Used (U)	Size of Hole Drilled	Number of Sacks or Cubic Feet of Cement	Depth of Cementing (if through perforations)	Top(s) of Cement in Annulus
14"	Surface	95'		Conductor	N	N/A	N/A	95'	Surface Returns
7"	Surface	1960'	23#	L80 BT&C	N	9-7/8"	674 cf	1960'	Surface Returns
5.5"	1920'	2050'	20#	N80 BT&C	N	13"	77cf Gravel	2050'	109% IP 77cf

PERFORATED CASING (Size, top, bottom, perforated intervals, size and spacing of perforations, and method.)

Logs/surveys run? ☒ Yes ☐ No If yes, list type(s) and depth(s).
Ran Array Compensated True Resistivity log

In compliance with Sec. 3215, Division 3, of the *Public Resources Code*, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Name of person filing report	Telephone Number	Signature	Date
Angela Thornbrough	661-616-0600		12/29/2014
Address		City/State	Zip Code
4700 Stockdale Hwy #120		Bakersfield, CA	93309
Individual to contact for technical questions:	Telephone Number	E-Mail Address:	
Angela Thornbrough	661-616-0600	athornbrough@vaqueroenergy.com	

OG100 (3/09)

SUBMIT IN DUPLICATE

48

RECEIVED

JAN - 6 2015

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

HISTORY OF OIL OR GAS WELL

Operator Vaquero Energy Field Cat Canyon County Santa Barbara

Well Ardantz 506 Sec. 2 T. 9N R. 33w SBB.&M.

A.P.I. No. 083-22869 Name Angela Thornbrough (Person submitting report) Title Agent (President, Secretary, or Agent)

Date 12/29/2014 (Month, day, year)

Signature

Address 4700 Stockdale Hwy #120 Bakersfield, CA 93309 Telephone Number 661-616-0600

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

Date	
12/8/2014	
12:00 17:00	MIRU Barbour Rig 77 on well "Ardantz 506" API# 083-22869 Start daywork @ 1700 hrs on 12/08/2014.
17:00 19:00	Dig out cellar with backhoe. Install corrugated cellar ring. Backfill and compact.
19:00 20:00	Install 14" X 13-5/8" starter head HCR valve 6" diverter line, NU BOP. Function test BOP.
20:00 21:00	Filled pit with used mud and conditioned to 80+ vis.
21:00 22:00	Strapped and calipered tools. Christy Proskow DOGGR rep waived diverter inspection.
22:00 23:00	Make up 9-7/8" MT bit on mud motor with ABH set at 1.83°. Scribed and oriented. Spudded well Ardantz 506 with Barbour 77 @ 2300 hrs on 12/08/2014.
23:00 23:30	Directional drill 9-7/8" hole from 95' to 108' with 100% returns.
23:30 0:30	Replace hydraulic hose on derrick.
12/9/2014	
0:30 6:00	Directional drill 9-7/8" hole from 108' to 354' with 100% returns.
6:00 17:00	Directional drill 9-7/8" hole from 354' to 1,358' with 100% returns.
17:00 17:30	Circulate hole clean for wiper trip.
17:30 19:30	Wipe the hole from 1,358' to 110' with no issues.
19:30 3:30	Directional drill 9-7/8" hole from 1,358' to 2,160' with 100% returns.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

HISTORY OF OIL OR GAS WELL

12/10/2014	TD well Ardantz 506 with Barbour 77 @ 0330 hrs on 12/10/2014.
3:30 4:00	
4:00 5:30	Circulate hole clean for wiper trip.
5:30 6:00	Wipe the hole from 2,160' to 1,300' with no issues.
6:00 10:00	Circulate and condition hole for logs.
10:00 11:00	POH for logs. Break down and load out directional BHA.
11:00 12:00	Service rig and clean rig floor.
12:00 13:00	Load out 4-1/2" drill pipe.
13:00 16:00	Wait on loggers.
16:00 17:00	HSM and RU Halliburton loggers. Make up tools and RIH. Tagged bottom at 2,158' (wireline depth) Ran Array Compensated True Resistivity log. Logged up from 2,158' to 95'. Rigged down loggers.
17:00 19:00	Decision was made to plug back from 2,160' to 2,050'. Loaded racks with drill pipe and measured.
19:00 19:30	RIH with open ended drill pipe to 2,153'.
19:30 20:00	HSM and rig up cementers. Pump 11 bbl, 116' cement plug as follows. Pump 2 bbls H20 test lines to 3,000 psi. Pump 3 bbls H20 followed by 22sx (11 bbls, 62 ft3) Type III cmt + 3% CaCl2 + 0.25lb/sx cello flake + 0.3% CD-32 2 gals/100 sxs FP-6L + 4% sodium Metasilicate + 35% Silica flour w/137% mix wtr @ 12.5 ppg, 2.83ft3/sx yld 15.59 gps mix water and displace w/26 bbls. Final PBMD 2,050'
20:00 21:30	POH to 2,020 and circulate clean.
21:30 22:30	POH from 2,020' to surface.
22:30 2:00	Rig up floor and walk to run casing. Load rack with casing.
12/11/2014	Run 46 joints of 7", 23#, BTC casing with the shoe set @ 1,960' and insert float @ 1,916'. 2 cement baskets in tandem from 1,959' to 1,955' with (4) 1" holes @ 1,956'. Rig down casing tongs. Rig up cement head and circulate casing. Dump thick clabbered mud. Truck over load of storage mud.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

HISTORY OF OIL OR GAS WELL

2:00	3:00	HSM with cementers while circulating and conditioning mud for cement job.
3:00	4:30	Shut down and pump 2 bbls H20 test lines to 3,000 psi. Pump 3 bbls H20 followed by 20 bbls Mud Clean I preflush followed by 238sx (120 bbls, 674 ft3) (20% open hole excess) Type III cmt + 3% CaCl2 + 0.25lb/sx cello flake + 0.3% CD-32 2 gals/100 sxs FP-6L + 4% sodium Metasilicate + 35% Silica flour w/137% mix wtr @ 12.5 ppg, 2.83ft3/sx yld 15.59 gps mix wtr Drop plug, displace w/75 bbls H20. Had 20 bbls good cmt t/sfc. Bump plug @ 1,000 psi, float held. CIP at 03:55 hrs 12/11/2014. Wash up and rig down cementers.
4:30	6:00	Remove landing joint. Rig down and remove diverter bag. (Dump and clean pit)
6:00	7:30	Cut and remove starter head. Dress casing and weld on 7-1/16" wellhead. Test and let cool.
7:30	9:00	Rig up 13-5/8" Class II A 3M BOP (2M minimum) and associated equipment.
9:00	10:00	Spot pipe wrangler. Load and measure 3-1/2" drill string.
10:00	12:30	MU 6" X 13" HO w/ 6-1/4" pilot bit and RIH to 1,904'.
12:30	13:00	Conduct MIT test. Mark Davis DOGGR rep witnessed and approved test. Close well in and tested casing and BOP to 2,075 psi for 15 mins. Bled off 10 psi to 2,065 psi in 15 minutes.
13:00	14:00	Clean out from 1,904' to insert @ 1,916'. Drill out insert, cement, and shoe at 1,960'.
14:00	14:30	RIH to 2,045' and tagged cement. Cut a shoulder at 2,040' and made 10' to 2,050' while changing hole over to KCL/Polymer. POOH to shoe at 1,960'.
14:30	16:00	Cut shoulder and open 9-7/8" hole to 13" from 1,960' to 2,050'.
16:00	16:30	Circulate hole clean, spot high vis pill.
16:30	18:00	POH wth hole opener from 2,050' and lay down hole opener.
18:00	19:00	Rig up and run 127.72' of slotted liner. Run 2-7/8" inner string and make up landing nipple SSA.
19:00	21:30	Run liner in the hole on 3-1/2" drill pipe to 2,050'. Top of SSA @ 1,920' / TOL @ 1,922' Top of Semi Perf @ 1,932' / Top of Full Perf @ 1,952' / Total of 40' lap, collar 6' out of shoe. Dump and clean pits. Fill pit with water and mix 3% KCL

HISTORY OF OIL OR GAS WELL

21:30	0:00	Change hole over to 3% KCL w/bleach breaker. Gravel pack with 6x9 gravel @ 2.75 bbls/min at 100 psi. Pumped 82 cu/ft and packed off @ 600 psi. Reversed out 5 cu/ft and re-stressed pack to 500 psi. Pumped a total of 77 cu/ft in place of 70 cu/ft calculated for a total of 109% gravel in place.
12/12/2014		
0:00	3:00	Dropped ball and set SSA with 1,600 psi. Released from liner and POH laying down 3-1/2" drill string. Laid down GP running tool. Release gravel packers.
3:00	4:00	Break down and lay out kelly.
4:00	5:30	Used 3 jts of 2-7/8" tbg for gravel pack. Picked up 17 more jts of 2-7/8" tbg. (20 joint kill string) Made up donut and TIW valve. Landed donut in 7" wellhead. Locked in donut and removed 2-7/8" landing joint.
5:30	6:00	Nipple down BOP.
6:00	8:00	Nipple down and set out BOP. Remove spacer spool and set out. Remove TIW valve and Install nipple and gate valve with bull plug. Secure well. Release Barbour Rig 77 from well Ardantz 506 @ 08:00 hrs on 12/12/2014.
8:00	18:00	Rig down and prepare rig for demob. Load out tubulars and send to Tubular Inspection. Release rental equipment. Stage rig and equipment off location. Clean location.

SUBMIT IN DUPLICATE

Well Location Sketch for Petro Rock, LLC

Well: ARDANTZ 506

API: 083-22869

Sec. 2, T9N, R33W, S.B.M.

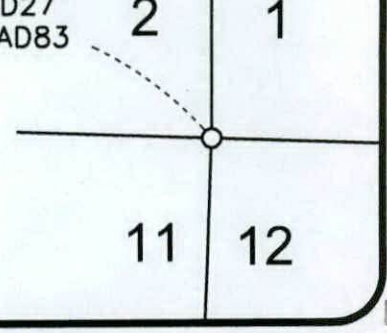
REVISED 11-17-2014

Top Centerline of Conductor for Ardantz 506
CSPCS Zone 5 NAD27 Coords In U.S. Foot:
N 512147.50'
E 1304790.53'
Elev.: 491.0' NGVD29
NAD27: 34°53'07.04455"N 34.885290°N
120°19'05.95135"W 120.318320°W
NAD83: 34°53'06.97015"N 34.885269° N
120°19'09.52006"W 120.319311° W

Blake Land Surveys
250 Industrial Way, Suite "C"
P.O. Box 869
Buellton, CA 93427
Tel: 805-688-2054
Est. 1980 PLS 4786

Section Corner
Found 2" Brass Cap (RCE 2928),
down 1.2'
1306811.00X 509902.11Y NAD27
34.879229°N 120.312403°W NAD83

LOCATION	X	Y
SecCor Sec 1-2-11-12	1,306,811.00	509,902.11
ARDANTZ 506	1,304,790.53	512,147.50
Location	(2020') West	2245' North



JRAL RESOURCES AGENCY OF CALIFORI
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
195 S Broadway, Suite 101 Orcutt, CA 93455-4655
Phone:(805) 937-7246 Fax:(805) 937-0673

No. T **315-0125**

REPORT ON OPERATIONS

CYCLIC STEAM INJECTION PROJECT
Sisquoc Zone

Matt Smith
Vaquero Energy, Inc. (V0725)
15545 Hermosa Rd.
Bakersfield, CA 93307-9477

Orcutt, California
April 09, 2015

Your operations at well **"Ardantz" 506**, A.P.I. No. **083-22869**, Sec. **2**, T. **09N**, R. **33W**, **SB** B.&M., **Cat Canyon** field, in **Santa Barbara** County, were witnessed on **4/6/2015**, by **Tyson McKinney**, a representative of the supervisor.

The operations were performed for the purpose of **demonstrating that all of the injection fluid is confined to the approved zone**.

DECISION: **APPROVED**

DEFICIENCIES: **NONE**

TM/pd

Steven Bohlen
State Oil and Gas Supervisor

cc: Well file
Santa Barbara County

By _____
Patricia A. Abel, *District Deputy*

OG109 (Rev. 10/2011)

42

B3

State of California
Department of Conservation
Division of Oil, Gas, and Geothermal Resources

√ No. T 315-0125

MECHANICAL INTEGRITY TEST (MIT)

Operator: **Vaquero Energy, Inc.**				Well: **"Ardantz" 506**	
Sec. **2**	T. **09N**	R. **33W**	B.&M. **S.B.**	API No.: **083-22869**	Field: **Cat Canyon**
County: **Santa Barbara**				Witnessed/Reviewed on: **04/06/2015**	

Tyson McKinney ,representative of the supervisor, was present from **0950** to **1145**

Also present were: **Calvin Howard (Thermal Tech); Juan Arredondo (Vaquero)**

Casing record of the well: **Do Not Type:**

Casing:

tbg:

Pkr

Perfs

The MIT was performed for the purpose of **T15 D1**

☑ The MIT is approved since it indicates that all of the injection fluid is confined to the formations below ~1750' feet at this time.

☐ The MIT is not approved due to the following reasons: (specify)

DO NOT TYPE:

Test Type: Static Temperature Survey
Shut-in Date: 04/03/2015
Survey Run: surface to 2008'
Rate: ~20'/minute

√ **CalWIMS** **UIC Binder**

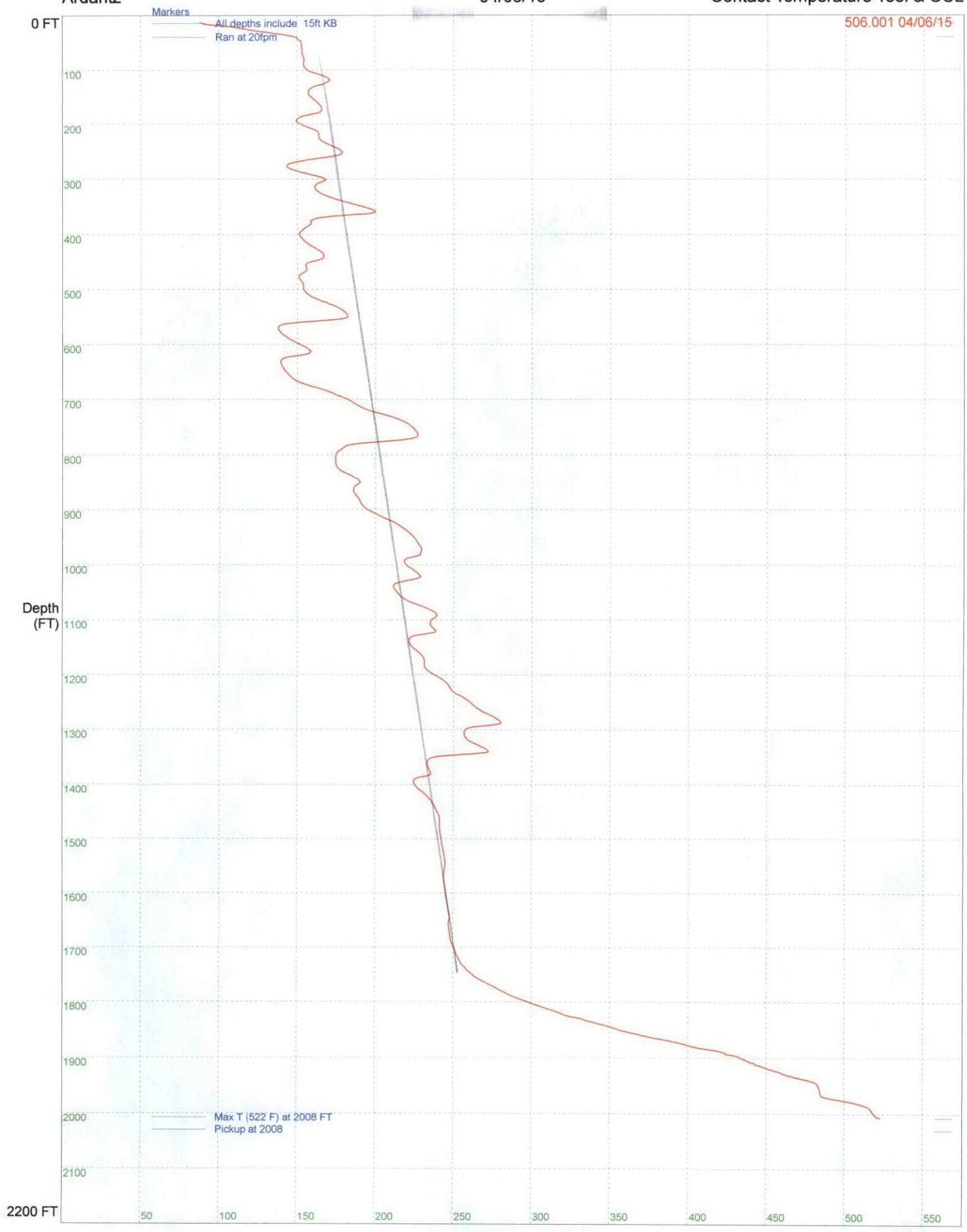
√ **UIC DB**

Vaquero Energy
Ardantz

506.001

04/06/15

Thermal Tech
Bakersfield, CA (661-331-5131)
Contact Temperature Tool & CCL



Well:	Ardantz 506	**Date:**	4/6/2015
Operator:	Vaquero	**Time:**	0950-1145
API#:	083-22869	**Engineer:**	Tyson McKinney

Depth	Temperature
13	88
23	112.2
33	134.1
43	150.5
53	152.9
63	153.2
73	153.6
83	154.4
93	154.4
103	158.3
113	168.4
123	168.8
133	159.7
143	157.2
153	160.2
163	164
173	165.6
183	156.8
193	149.3
203	154.7
213	162.9
223	163.7
233	167
243	174.5
253	178.7
263	161.8
273	144
283	147.8
293	160.7
303	166.9
313	161.1
323	163.9
333	171.9
343	183.2
353	195.9
363	193.7
373	160.2
383	157.8
393	153.2
403	151.8
413	155.1
423	160.6
433	165.8
443	166.4
453	155.8
463	156
473	151.9
483	152
493	153.9
503	154.8
513	158.9
523	167.9
533	176.3
543	181.2
553	179.1
563	141.1
573	138.2

Depth	Temperature
583	141.2
593	146.5
603	153.9
613	158.6
623	143.6
633	139.5
643	141
653	143.9
663	147.9
673	155.7
683	167.7
693	176.8
703	184.3
713	190
723	200
733	212.2
743	220.1
753	224.5
763	227
773	217.1
783	182
793	176.5
803	174.7
813	174.6
823	175.7
833	180.8
843	187.8
853	189.2
863	186.1
873	187.5
883	190
893	191.9
903	197.4
913	204.3
923	212.3
933	217.8
943	222
953	225.3
963	227.7
973	229.5
983	228
993	218.5
1003	221.1
1013	225.8
1023	228.1
1033	213.8
1043	211.8
1053	214.8
1063	218.9
1073	227.1
1083	235.7
1093	239.2
1103	235.2
1113	236.1
1123	237.4
1133	222.1
1143	222.1

Depth	Temperature
1153	225.3
1163	229.4
1173	231.3
1183	231.3
1193	233.8
1203	239.6
1213	244.8
1223	247.6
1233	250.8
1243	257.1
1253	261.9
1263	266.4
1273	273.2
1283	279.1
1293	269.1
1303	257
1313	257.3
1323	261.7
1333	269.3
1343	265.8
1353	234.7
1363	233
1373	234.6
1383	234
1393	224.7
1403	226.1
1413	230.1
1423	233.7
1433	236.8
1443	238.5
1453	240.2
1463	241.3
1473	241.2
1483	241.5
1493	241.9
1503	242.4
1513	243.1
1523	243.9
1533	244.4
1543	244.8
1553	244.7
1563	244
1573	243.9
1583	244.3
1593	244.8
1603	245.2
1613	245.9
1623	246.5
1633	247.1
1643	247.8
1653	247.2
1663	247.2
1673	247.7
1683	248.2
1693	249.3
1703	250.7
1713	252.1

Depth	Temperature
1723	253.9
1733	256
1743	259.6
1753	263.7
1763	269.9
1773	276.3
1783	282.9
1793	290.4
1803	300.5
1813	311
1823	320.9
1833	335
1843	348.7
1853	360.7
1863	376.5
1873	394.6
1883	409.1
1893	424.2
1903	436.3
1913	444.6
1923	455.4
1933	466.9
1943	480.8
1953	483.9
1963	484.8
1973	492.7
1983	510.5
1993	517.1
2003	520
2008	522.8

'URAL RESOURCES AGENCY OF CALIFOR
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
195 S Broadway, Suite 101 Orcutt, CA 93455 - 4655

No. P 315-0004

Old	New
--	128
FIELD CODE	
--	15
AREA CODE	
--	
POOL CODE	

PERMIT TO CONDUCT WELL OPERATIONS

Cyclic Steam
Sisquoc Zone

Orcutt, California
January 09, 2015

Matt Smith, Agent
Vaquero Energy, Inc. (V0725)
15545 Hermosa Rd.
Bakersfield, CA 93307-9477

Your **Supplementary** proposal to **DRILL** well **"Ardantz" 506**, A.P.I. No. **083-22869**, Section **2**, T. **09N**, R. **33W**, **SB** B. & M., **Cat Canyon** field, **Sisquoc** area, **--** pool, **Santa Barbara** County, dated **12/1/2014**, received **1/6/2015** has been examined in conjunction with records filed in this office. (Lat: **34.885977** Long: **-120.319261** Datum:**83**)

THE PROPOSAL, COVERING WORK ALREADY COMPLETED, IS APPROVED.

NOTE:
1. In all other respects, the operations are to be conducted in accordance with provisions outlined in Permit P**314-0384**, dated **August 07, 2014**.

Blanket Bond
UIC Project No. 12815029
cc: Well file / Project file / EPA binder / Santa Barbara County

Steven Bohlen
State Oil and Gas Supervisor

Engineer Jon Iverson
Office (805) 937-7246

By Jnduson For P.A. Abel
Patricia A. Abel, District Deputy

JI/pd

A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended. Issuance of this permit does not affect the Operator's responsibility to comply with other applicable state, federal, and local laws, regulations, and ordinances.

OG111 (revised 6/2011)

FOR DIVISION USE ONLY			
	Forms		
Bond	OGD114	OGD121	
Blanket	Cwims 1/15		

OG

NATURAL RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

RECEIVED
DEC 1[illegible] 2014
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

SUPPLEMENTARY NOTICE

Detailed instructions can be found at: www.conservation.ca.gov/dog/

A notice to the Division of Oil, Gas, and Geothermal Resources, dated 7/18/2014, stating the intention to

Drill (Drill, Rework, Abandon) well Ardantz 506, API No. 083-22869,

Sec. 2, T. 9N, R. 33W, ____ B.&M., Cat Canyon Field, Santa Barbara County

should be amended because of changed conditions.

The complete casing record of the well (present hole), including plugs and perforations, is as follows: (Attach wellbore schematics diagram also.)

The total depth is: _____ feet. The effective depth is: _____ feet.

Present completion zone(s): _____ (Name). Anticipated completion zone(s): _____ (Name).

Present zone pressure: _____ psi. Anticipated/existing new zone pressure: _____ psi.

We now propose: (A complete program is preferred and may be attached.)

To set bottom hole location at 34.8868207, -120.3187780 (NAD83)
Please see the attached Line Well Agreement.

RECEIVED
JAN - 6 2015
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth at total depth: _____ feet _____ (Direction) and _____ feet _____ (Direction) Estimated true vertical depth: _____

Will the Field and/or Area change? Yes☐ No☐ If yes, specify New Field: _____ New Area: _____

The Division must be notified immediately of changes to the proposed operations. Failure to provide a true and accurate representation of the well and proposed operations may cause rescission of the permit.

Name of Operator			
Vaquero Energy (P315-0004)			
Address: 4700 Stockdale Hwy		City/State: Bakersfield, Ca.	Zip Code: 93309
Name of Person Filing Notice: Angela Thornbrough	Telephone Number: 661-616-0600 ext 115	Signature: [signature]	Date: 12/01/2014
Individual to contact for technical questions: Angela Thornbrough	Telephone Number: 661-616-0600 ext 115	E-Mail Address: athornbrough@vaqueroenergy.com	

This notice must be filed, and approval given, before the operations begin. If operations have not commenced within one year of the Division's receipt of this supplementary notice, this notice will be considered cancelled.

OG123 (1/09)

37

LINE WELL AGREEMENT
Cat Canyon Oil Field
Santa Barbara County, California

THIS LINE WELL AGREEMENT is made and declared effective this 23 day of APRIL, 2014 between PetroRock, LLC, a California limited liability company ("PetroRock"), and 2014 ("Lessors");

WITNESSETH:

WHEREAS, PetroRock is the lessee under the oil, gas and mineral lease(es) set forth on Exhibit A, attached hereto (collectively, the "Leases") covering lands described therein located in Santa Barbara County, California; and

WHEREAS, PetroRock owns an undivided mineral right in the lands set forth on Exhibit B, attached hereto (collectively, the "Mineral Fee"), with said lands being located in Santa Barbara County, California; and

WHEREAS, PetroRock, in order to facilitate the orderly development of the Leases and Mineral Fee, and to promote the conservation of oil, gas and other hydrocarbon substances, desires to create Line Well Corridors as defined below.

WHEREAS, a "Line Well Corridor" is a 660 foot wide strip of land having as its centerline the common boundary lines separating the lands covered by each Lease and/or Mineral Fee. The Line Well Corridor thus covers a 330 foot wide strip covered by the lands of each Lease and/or Mineral Fee.

NOW, THEREFORE, PetroRock and the Lessors hereby agree that to the extent PetroRock drills a well whose producing interval is within the Line Well Corridor ("Line Well"), that production for each Line Well shall be attributed and allocated, and royalty paid, on the basis that one-half of said production came from lands located on one side of the common boundary line, and one-half of said production came from lands located on the other side of the common boundary line regardless of from which of the lands the producing interval is located, and regardless of the terms of each Lease. Production, drilling or reworking of such Line Well shall be treated as production, drilling or reworking operations under each of the applicable Leases. Lessors waive any offset obligations regarding a Line Well under each Lease or implied by law.

This Line Well Agreement may be executed in any number of counterparts, each counterpart to be considered an original document for all purposes.

Exhibit A- List of Leases

All located in Santa Barbara County, Ca. (See lease for full property description)

Lessor	Lease Date	Recording Info	Partial Description
Marsalek Family Trust, Julie Ellen Wage, Thomas D. Tunnell Family Survivor's Trust, Shirley Reed, Marianne Donner and Arthur Tunnell	10/25/06	2007-0084182	S2/SE4, Sec 2 and N2/NE4, Sec 11-9N-33W
James L. Gardener and Cleta M. Gardener, trustees of the Gardner Family Trust	12/21/07	2008-0014375	Parcel 1 & 2 in N2/SE4, Sec 2-9N-33W
Stephanie R. Ventura and Robin M. Ventura, Trustees of the Robin Ventura & Stephanie R. Ventura Revocable Trust dated January 3, 1996; Darlene Ventura	12/21/07	2008-0014376	Parcel 1 of Parcel Map 13177
Henri Pierre Ardantz and Jean Annette Ardantz, Trustees of the Ardantz Revocable Trust dated November 20, 1981; Michael Dominick Ardantz; Henri Pierre Ardantz, successor Trustee of the Dominick Ardantz Family Trust, dated August 12, 1988; Michael Dominick Ardantz and Rita A Ardantz, Trustees of the Michael D. Ardantz and Rita A Ardantz Family Trust	12/21/07	2008-0014377	Parcel 2 of Parcel Map 13177
Henri Pierre Ardantz and Jean Annette Ardantz, Trustees of the Ardantz Revocable Trust dated November 20, 1981; Michael Dominick Ardantz; Henri Pierre Ardantz, successor Trustee of the Dominick Ardantz Family Trust, dated August 12, 1988; Michael Dominick Ardantz and Rita A Ardantz, Trustees of the Michael D. Ardantz and Rita A Ardantz Family Trust	12/21/07	2008-0014378	Parcel 3 of Parcel Map 13177
Joe & Sarah Belle Shelton Living Trust dtd 4/23/01	05/13/08	2008-0045571	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Alice Lenz	04/28/08	2008-0045570	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Caroline G. Gwerder and F. Joseph Gwerder as Co-Trustees of the Gwerder Family Trust	04/28/08	2008-0045568	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Winola Hazard	06/19/08	2008-0045562	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Debra T. Durney	06/13/08	2008-0045560	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Sharon Durney	06/11/08	2008-0058554	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996
Michael Scally	10/19/12	2013-023548	Parcels 1 & 2 of Parcel Map 13177
Shannon Porter	07/27/12	2013-023549	Parcels 1 & 2 of Parcel Map 13177
Dias Ranch, LLC	05/03/10	2010-0036056	Portion Sec. 1-9N-33W
AF & CA Fugler, Inc.	01/14/14	2013-0016701	S2 Sec 25-10N-33W
Foxen Canyon Family Partnership	06/24/08	2008-0045561	NW/4, Sec. 12-9N-33W
Raymond L. Hibbard and Treva Hibbard	05/24/11	2011-0045788	Parcel 1, 2 & 3 of Parcel Map 13177
Raymond Hibbard as Executor of the Estate of Avis Ardantz	03/16/12	2012-0023246	Parcel 2 & 3 of Parcel Map 13177
Sharon Durney, Executor of the Estate of Margaret D. Durney	06/11/08	2013-0017063	Parcels 1& 2 of Map Book 78, Page 74 and Parcel A of Parcel Map 119996, E2/NW/4 & E2/NW4/NW4 Sec. 2-9N-33W

End of Exhibit A

Exhibit B- Mineral Fee

All lands located in Santa Barbara County, California.

Parcel One:

Parcels 1 and 2 of a Map of Vacation, Reversion to Acreage of a portion of the Bradley Garey Tract, in the County of Santa Barbara, State of California, according to the map recorded April 21, 1972 in Book 78, page 74 of Maps.

APN: 129-080-007 & 011

Parcel Two:

Parcel "A" of Parcel Map No. 11996, in the County of Santa Barbara, State of California, according to the map recorded June 10, 1976 in Book 15, pages 91 through 93 of Parcel Maps.

Together with such rights as Lessor may have in any roads, streets, alleys, waterways, canals, sloughs, levees, ditches, easements and rights of way upon, within or adjoining the Leased Land.

APN: 129-100-037

Parcel Three:

The East Half of the Northwest Quarter (E½ NW¼) and the East Half of the Northwest Quarter of the Northwest Quarter (E ½ NW ¼ NW ¼) of Section 2, Township 9 North, Range 33 West, SBB&M, in the County of Santa Barbara, State of California, being Tract 100, and a portion of Tracts 101 to 104 inclusive, of the Bradley-Garey Tract according to the map thereof recorded in Book 1, Page 32 of Maps and Surveys, records of the said County, and portion of Maulsby Avenue and Wicks avenue (abandoned) adjoining.

Excepting therefrom any portion thereof included within the lines of Lots E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y and Z of the Bradley-Garey Tract, in the County of Santa Barbara, State of California, according to the map thereof recorded in Book 1, at Page 32 of Maps and Surveys, records of said County. Excepting therefrom all of Lot E lying Easterly of the prolongation Northerly of the West line of Ward Avenue, as shown on said map.

APN: Portion of 129-100-032

Parcel Four:

The East Half of the Northeast Quarter of the Southwest Quarter (E ½ NE ¼ SW ¼) of Section 2, Township 9 North, Range 33 West,, SBB&M, in the County of Santa Barbara, State of California, b3eing a portion of Tracts 103, 107 and 109 of the Bradley-Garey Tract, a portion of the "Garey's Orchard Tract" as shown on the map thereof recorded in Book 1, page 32 of Maps and Surveys, records of said County, and a portion of Maulsby Avenue (abandoned) adjoining.

APN: Portion of 129-100-032

End of Exhibit B

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

By Joseph Nahama, its President

LESSORS:

By Marianne Donner
Print Name MARIANNE DONNER

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written

PETROROCK:

PETROROCK, LLC

By Joseph Nahama, its President

LESSORS:

By Lance R Erickson
Print Name Lance R Erickson

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

By _____
Print Name _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Richelle Jenkins

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Terrance A. Reed

Print Name: Terrance A. Reed

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: William Roy Reed, Jr., Trustee TO Reed Family Trust

Print Name: William Roy Reed, Jr TO Reed Family Trust

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Cynthia L Tunnell Truster, Dtd By: Cynthia L. Tunnell Trust UOT 5-16-2006

Print Name: Cynthia L Tunnell, Truster of the Cynthia L Tunnell Trust UOT 5-16-2006 Print Name: _____

By: _____ By: _____

Print Name: _____ Print Name: _____

By: _____ By: _____

Print Name: _____ Print Name: _____

By: _____ By: _____

Print Name: _____ Print Name: _____

By: _____ By: _____

Print Name: _____ Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Mark R. Tunnell

Print Name: MARK R. TUNNELL

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Michael Tunnell

Print Name: Michael Tunnell

Trustee, Gardner-Tunnell Trust

By: Kerry S Gardner

Print Name: Kerry S. Gardner

Trustee, Gardner-Tunnell Trust

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Terence T. Tunnell

Print Name: Terence T. Tunnell

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, its President

LESSORS:

By: Julie Wage, Trustee Thomas and Julie Wage Family Trust

Print Name: Julie Wage, Trustee Thomas and Julie Wage Family Trust

By: Thomas Wage, Trustee

Print Name: Thomas Wage, Trustee

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____
By: Charles Dobie, its President

LESSORS:

By: JAMES J SHELTON JR TTEE of SHELTON FAMILY TRUST

Print Name: JAMES J SHELTON JR

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

_____	Alice Lenz
By: _____	By: _____
Print Name: _____	Print Name: ALICE LENZ
By: _____	By: _____
Print Name: _____	Print Name: _____
By: _____	By: _____
Print Name: _____	Print Name: _____
By: _____	By: _____
Print Name: _____	Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

Ewerder Family Trust
Caroline G. Ewerder

By: Caroline G Ewerder

Print Name: CAROLINE G. EWERDER

F. Joseph Ewerder

By: Caroline G. Ewerder POA

Print Name: F. Joseph Ewerder
Caroline G. Ewerder. POA

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

By: Joseph Nahama, President

LESSORS:

Edward S. Hazard, as Successor Trustee of the John C. Hazard and Winola A. Hazard Revocable and Amendable Community Property Trust dated August 22, 1991, as amended and restated in 2008

By: _____

Print Name: Edward S. Hazard, Trustee

_____

By: _____

Print Name: _____

By: _____

Print Name:

_____

By: _____

Print Name: _____

By: _____

Print Name:

_____

By: _____

Print Name: _____

By: _____

Print Name:

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

November 30th 2014

By: Debra T. Durkey

Print Name: Debra T. Durkey

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

_____

By: Sharon Durney

Print Name: SHARON DURNEY

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

Ardantz Revocable Trust dtd. 11/20/1991

By: Henri Ardantz

Print Name: Henri Ardantz, Trustee

By: Henri Ardantz

Print Name: Henri Ardantz, an individual

By: _____

Print Name: _____

By: _____

Print Name: _____

_____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Joseph Nahama, President

LESSORS:

Michael D. Ardantz & Rita A. Ardantz Trust dtd. 10/17/2001

By: Michael D. Ardantz

Print Name: Michael D. Ardantz, Trustee

By: Rita A Ardantz

Print Name: Rita A. Ardantz

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

By: Charles Dobie, its President

LESSORS:

By: Raymond Hibbard

Print Name: RAYMOND HIBBARD

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Charles Dobie, its President

LESSORS:

_____

By: _____

Print Name: _____

By: _____

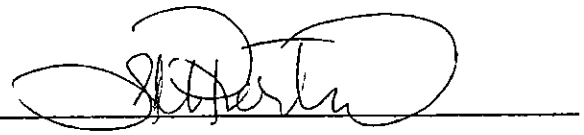
Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____



By: Shannon Porter

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

_____

By: Charles Dobie, its President

LESSORS:

A.F. & C.A. FUGLER, INC.

By: Karen D. Nolan

Print Name: KAREN D. NOLAN

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

IN WITNESS WHEREOF, said parties have caused this lease to be duly executed as of the date first hereinabove written.

PETROROCK:

PETROROCK, LLC

9/19/2014

By: Joseph Nahama, its President

LESSORS:

By: Mary N Page

Print Name: Mary N Page

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

By: _____

Print Name: _____

N JRAL RESOURCES AGENCY OF CALIFORN.
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
195 S Broadway, Suite 101 Orcutt, CA 93455-4655
Phone:(805) 937-7246 Fax:(805) 937-0673

No. T **314-0456**

REPORT ON OPERATIONS

CYCLIC STEAM INJECTION PROJECT
Sisquoc Zone

Matt Smith
Vaquero Energy, Inc. (V0725)
15545 Hermosa Rd.
Bakersfield, CA 93307-9477

Orcutt, California
December 16, 2014

Your operations at well **"Ardantz" 506**, A.P.I. No. **083-22869**, Sec. **2**, T. **09N**, R. **33W**, **SB** B.&M., **Cat Canyon** field, in **Santa Barbara** County, were witnessed on **12/11/2014**, by **Mark S. Davis**, a representative of the supervisor.

The operations were performed for the purpose of **pressure testing the 7" casing**.

DECISION: **APPROVED**

DEFICIENCIES: **NONE**

MSD/pd

cc: Well file / Project file / EPA binder / Santa Barbara County

Steven Bohlen
State Oil and Gas Supervisor

By _____
Patricia A. Abel, *District Deputy*
by R Brunetti

OG109 (Rev. 10/2011)

✓ No. T 314-0456

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

CASING PRESSURE TEST/PFO

Operator: Vaquero Energy Well designation: Ardentz 506
Sec. 09N, T. 33W, R. 33W, SB B.& M. API No.: 083-22889 Field: Cat Cyn
County: Santa Barbara. Witnessed/Reviewed on: 12/11/14. M S Davis, representative(s)
of the supervisor, was/were present from 1115 to 1315.
Also present was/were Scott Petersen DSM, Vaquero Energy
Casing record of well:
14" Conductor
7" to 1960'

The operations were performed for the purpose of: SAPT T-5 7" D1

Pressure Test Casing

Packer/Bridge Plug at: 1960' (7" shoe) Well Type: OG SC
Casing Pressured With: Water Volume: Already Full
Casing Pressure: Start Psi: 2075 Start Time: 1302 hr
Casing Pressure: End Psi: 2075 End Time: 1312 hr
Pressure Held: 10 min. Total Drop in Pressure: 0 psi 0 %
Tests Results: ✓ Good ____ No Good
Remarks:

Do not type Delays getting ready for test.

PFO

Casing or Tubing Pressure: ____ psi
Initial Pressure Drop: ____ psi after ____ sec./min.
Final Pressure: ____ psi
PFO Timeframe> Date: ____ Time: ____ To Date: ____ Time: ____
Total Time: ____

Remarks:

10

OGD6A (1/07)

✓ CalWIMS ✓ UIC DB
N/A UIC Folder

N/ RAL RESOURCES AGENCY OF CALIFORNI/
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
195 S Broadway, Suite 101 Orcutt, CA 93455 - 4655

No. P 314-0384

Old	New	
–	128	FIELD CODE
–	15	AREA CODE
–	00	POOL CODE

PERMIT TO CONDUCT WELL OPERATIONS

Cyclic Steam
Sisquoc Area

Orcutt, California
August 07, 2014

Matt Smith, Agent
Vaquero Energy, Inc. (V0725)
15545 Hermosa Rd.
Bakersfield, CA 93307-9477

Your proposal to **Drill** well **"Ardantz" 506**, A.P.I. No. **083-22869**, Section **2**, T. **09N**, R. **33W**, **SB** B. & M., **Cat Canyon** field, **Sisquoc** area, **Any** pool, **Santa Barbara** County, dated **7/18/2014**, received **7/30/2014** has been examined in conjunction with records filed in this office. (Lat: **34.885977** Long: **-120.319261** Datum:**83**)

THE PROPOSAL IS APPROVED PROVIDED:

1. Blowout prevention equipment, as defined by this Division's publication No. M07, shall be installed and maintained in operating condition and meet the following minimum requirements:
   a. A **6" diverter system** on the **12"** casing.
   b. Class **II A 2M,** with hydraulic controls, on the **7"** casing.
2. Hole fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. The **7"** casing is cemented with sufficient cement to fill behind the casing to at least 500' above all oil, gas zones and/or anomalous pressure intervals and to at least 100' above the base of freshwater zone, if present.
4. Class "G" cement with a minimum of 35% silica flour, or a Division approved equivalent, shall be used for cementing casing to prevent thermal decomposition in active steam zones or where steaming is anticipated.
5. This well shall conform to the provisions set forth in our letter dated **September 14, 2011**, approving the project.
6. A pressure test is conducted to demonstrate the mechanical integrity of the **7"** casing.
7. The maximum allowable surface injection pressure shall not exceed **casing test pressure**.
8. Once drilled the well location shall be surveyed and the survey shall be filed with this office. Latitude and longitude shall be in decimal degrees, to six decimal places, in NAD83.
9. No program changes are made without prior Division approval.
10. **THIS DIVISION SHALL BE NOTIFIED TO:**
    a. Inspect the diverter system prior to commencing **drilling** operations.
    b. Witness a pressure test of the **7"** casing prior to commencing injection, and every **5** years thereafter.
    c. Witness the running of a static temperature survey within **4 months** of commencing injection, or the first time the pump is pulled, whichever is soonest, and every **5** years thereafter.

CONTINUED ON PAGE 2

Blanket Bond
UIC Project No. 12815029
cc: Well file / Project file / EPA binder / Santa Barbara County

Steven Bohlen
State Oil and Gas Supervisor

Engineer Jon Iverson
Office (805) 937-7246

By Jon Iverson For P A Abel
Patricia A. Abel, District Deputy

JI/lc

9

A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended. Issuance of this permit does not affect the Operator's responsibility to comply with other applicable state, federal, and local laws, regulations, and ordinances.

OG111 (revised 6/2011)

Well #: **"Ardantz" 506**
API #: **083-22869**
Permit: **P 314-0384**
Date: August 07, 2014

NOTE:

1. The required History of Oil or Gas Well (OG103) shall include a complete description of the required casing pressure test.
2. Well operations shall be conducted in compliance with field rule No. **307 - 023**, dated **June 11, 2007**.
3. The Division routinely monitors monthly well production data and if anomalous water production is indicated, remedial action will be ordered.
4. Unlined sumps containing harmful water are not to be located over freshwater bearing aquifers.
5. Hole fluid disposal must comply with Regional Water Quality Control Board regulations.

RECEIVED
JUL 30 2014
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

NATURAL RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

FOR DIVISION USE ONLY			
	Forms		
Bond	OGD114	OGD121	
Blanket	GW INS 07/14	LC	

NOTICE OF INTENTION TO DRILL NEW WELL

F 128
A 15
P 00

Detailed instructions can be found at: www.conservation.ca.gov/dog/

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to drill well Ardantz 506, well type OG/SC, API No. 083-22869 (Assigned by Division),

Sec. 2, T.9N, R. 33W, SB B.&M., Cat Canyon Field, Santa Barbara County.

Legal description of mineral-right lease, consisting of _____ acres (attach map or plat to scale), is as follows:

Do mineral and surface leases coincide? Yes☒ No☐. If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of well 2000 feet West (Direction) along section ☒ / property ☐ (Check one) line and 2502 feet North (Direction)

at right angles to said line from the SE corner of section ☒ / property ☐ (Check one) 2 and

Lat./Long. in decimal degrees, to six decimal places, NAD 83 format: Latitude: 34.8859773 Longitude: -120.3192613

If well is to be directionally drilled, show proposed coordinates (from surface location) and true vertical depth at total depth:

679 feet East (Direction) and 273 feet South (Direction). Estimated true vertical depth 2000. Elevation of ground above sea level 468 feet. All depth measurements taken from top of KB (Derrick Floor, Rotary Table, or Kelly Bushing) that is 12 feet above ground.

Elev 480 KB

Is this a critical well as defined in the California Code of Regulations, Title 14, Section 1720(a) (see next page)? Yes☐ No☒

Is a California Environmental Quality Act (CEQA) document required by a local agency? Yes☐ No☒ If yes, see next page.

PROPOSED CASING PROGRAM

SIZE OF CASING (Inches API)	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS	FORMATION PRESSURE (Estimated Maximum)	CALCULATED FILL BEHIND CASING (Linear Feet)
12"	1/4"WT	Conductor	Surf	75	75	NA	75
7"	23#	K55-BTC	Surf	2020'	2020'	769	2020'
5-1/2"	20#	N80-BTC	2000'	2200	Slotted Liner	769	Gravel Packed

(Attach a complete drilling program including wellbore schematics in addition to the above casing program.)

Estimated depth of base of fresh water: 1300' Anticipated geological markers: Sisquoc S1b, 1950 ft (Name, depth)

Intended zone(s) of completion: Sisquoic Zone 2000 ft , 750psi Estimated total depth: 2200 (Name, depth and expected pressure)

The Division must be notified immediately of changes to the proposed operations. Failure to provide a true and accurate representation of the well and proposed operations may cause rescission of the permit.

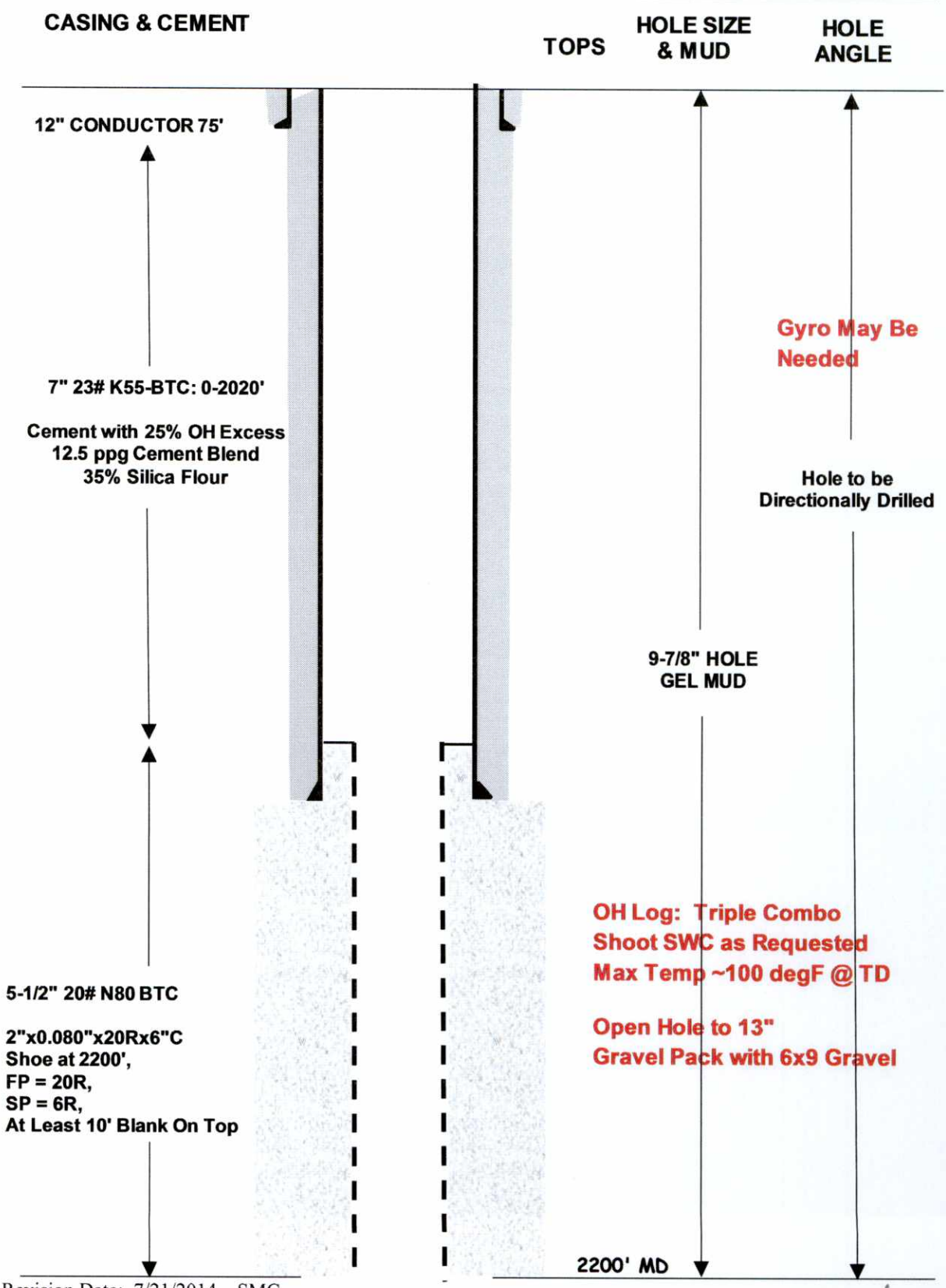
Name of Operator			
Vaquero Energy Inc		P 314-0384	
Address		City/State	Zip Code
15545 Hermosa Road		Bakersfield	93307
Name of Person Filing Notice	Telephone Number:	Signature	Date
Stephen Cunningham	661-747-9631		7/18/2014
Individual to contact for technical questions:	Telephone Number:	E-Mail Address:	
Stephen Cunningham	661-747-9631	scunningham@vaqueroenergy.com	7

This notice and an indemnity or cash bond shall be filed, and approval given, before drilling begins. If operations have not commenced within one year of the Division's receipt of the notice, this notice will be considered cancelled.

Wellbore Diagram

WELL: Ardantz 506 | 2014 Drilling Program | RIG: Barbour 77

SPUD: TBD | API: TBD | KB ELEV: 15'



Revision Date: 7/21/2014 – SMC

VAQUERO
ENERGY

Ardantz 506
Drilling Program

Cat Canyon Field
API # TBD

Proposed Well Conditions:

TMD: 2200' ETD: 2000' KB: **12'**

Casing: 12", ¼" wall conductor cemented at 75' BGL
7", 23#, K55, BTC Cemented at **~2020'**

Liner: **5-1/2", 20#, N80, BTC**, Bottom at **~2200, SSA at ~2000'**.

Liner Slots: **FP = 2" X .080" X 20R X 6"C**
SP = 2" X .080" X 6R X 6"C

Gravel Pack: Use 6X9 gravel size

Proposed Drilling Program:

Notes:

- **Always maintain enough fluid on location to keep hole full. Keep hole full at all times until well is secured.**
- **Notify DOGGR of any alterations to the wellbore including: cement plugs, changes in casing design, changes in completion program.**
- **Maintain and have available all BOPE equipment on location as stipulated by the DOGGR permit.**
- **Do not operate without a DOGGR permit.**
- **Do not attempt to make up angle by increasing DLS above 3deg without discussing with engineer and geologist**
- **DOGGR's Ross Brunetti has agreed to have a casing test while testing BOPE be considered for the MIT needed to commence steaming operations.**
- **Leave a 15-30 joint kill string in the hole before RDMO.**

Be sure to double check with Joe Nahama and Matt Smith before spudding to ensure that you are working off of the most up to date directional plan.

Offset Data:

- Lots of pebbles/boulders on several wells in first 500'. Maintained a funnel vis of 60+ to keep hole stable.
- Average ROP for first drilling program was 75 fph. Caliper logs show this ROP keeps hole relatively in gage which is critical for good cement jobs.
- 6" drill collars were originally used in the BHA. Sticky through dog legs, lots of overpull. Swapped out to 5" drill collars and encountered less problems. Eventually swapped out to 4" HWDP during Tunnel S4.

5

NOTE: Gyro may be needed for first 500-1000' until we get clean readings from our directional tools. Please contact Geoguidance, Gyrodata, and Pengo to coordinate.

1. MIRU rotary drilling equipment (**Barbour 77**) and mud system to a prepared graded well location. Install a rental starter head and a Class II 2M BOPE with 6" diverter on the conductor as required by the DOGGR.
    - Mix Spud Mud: high funnel vis (60+) needed to keep hole stable through shallow pebble/boulder zone through first 500'.
2. **No mudloggers– confirm with Project Geologist (Joe Nahama).**
3. MU **9-7/8"** directional tools, BHA, scribe in hole. Directionally drill hole to the proposed total depth of **2200' MD** using a Gel/Cypan (LSND) mud system as directed by Vaquero's wellsite supervisor.
4. Make wiper trips as necessary for hole stability (suggested every 500' or as conditions warrant). Circulate and condition mud for loggers. Confirm no flow prior to POOH to log. Keep hole full while POOH.
    - **BHA Recommendation: Bit, XO, MM, 9-5/8" Stab, NMFDC, Sub, NMFDC, XO, 6 HWDP, Drilling Jars, 6 HWDP or something flexible to make inclination right out of the conductor.**
    - Maintain drilling mud specifications as per mud company service. Recommendation: Keep mud weight below 9.6 ppg and fluid loss at 4 – 6 cc
    - Wipe and ream hole as necessary.
    - Keep drill string in motion.
    - Check for flow prior to all wiper and bit trips.
    - See attachment for Directional Plan
    - Pull up into a less deviated hole section when having to work on mechanical issues with the rig. If repairs are extensive, POOH completely.
5. Rig up Open Hole logging service. Run triple combo log or equivalent from TD to shoe of conductor. ***Obtain sidewall samples only if directed by Vaquero's wellsite geologist.*** Rig down loggers.
    - Provide 24 hour and 8 hour notice to logging company
    - Give 6 hours notice to Vaquero's wellsite geologist Joe Nahama (661) 201-1115
6. Run in hole with 9-7/8" clean out BHA and condition hole and mud for running casing. POOH and lay down clean out BHA. Confirm no flow prior to POOH. Fill hole while POOH.
7. Pick up and run **7", 23#, K55, BT&C** to specified shoe depth **(+/-2020')** as follows:
    - Bullnosed guide shoe on bottom at **±2020'** or as directed by project geologist
    - Shoe joint to be equipped w/(2) cement baskets above shoe and 4 - 1" torch cut holes 4' - 6' above shoe or opposite top cement basket.
    - Insert float valve w/fill-up tube at top of shoe joint or on second joint if shoe joint is less than 20' in length.
    - Centralize 7" casing to surface w/ 9-7/8" x 7" centralizers as directed by cementing company.
        - Standard bow centralizers on shoe joint and next 3 joints

- Standard bow centralizers as directed to ensure adequate casing standoff through doglegs

8. MIRU cementing service contractor. Fill and pressure test lines to 2000 psi. Drop ball, pump preflush, mix and pump cement slurry. Displace wiper plug with fresh water. Pump at reduced rates when cement returns are observed at surface. Bump plug at 500 psi over pumping pressure, check insert. Do not allow flowback to exceed 3 bbls. If insert fails to hold, bump plug and shut in at 500 psi.

   NOTE: <u>Cement volume to be +/- 25% over Caliper Volume</u>

   - 7" csg X 9-7/8" hole, cap = 0.2646 cf/ft: 7", 23# casing capacity = 0.2210 cf/ft
   - Pre-flush: LCM pre-flush as designed by cement company
   - Cement slurry: 12.5 ppg equivalent cement blend.
   - Displace cement with water.
   - Bump plug with 500 psi over final pumping pressure
   - After bumping plug on insert WOC min 2-3 hrs **(unless using conductor ring).**
   - Land casing and nipple down BOPE, cut off starter head

9. Land 7"x 600 series Cameron forged wellhead. NU and function test Class II BOPE.

10. M/U and RIH with **6-1/8**" drilling BHA, tag cement. Close BOPE and pressure test BOPE to 500 psi. **DOGGR to be notified to witness BOP test.**

    - **Perform DOGGR required MIT to 2000 psi for 15 minutes. DOGGR to witness MIT. Document MIT witness.**

11. If satisfactory, drill out cement, wiper plug, float, shoe and run to bottom.

12. Circulate hole clean and POOH to shoe.

13. Dump and clean mud pit. Mix KCL polymer completion fluid as directed. Maintain completion fluid funnel viscosity in the 30 – 40 second range. Run in hole to TD (or plugged back TD) and change over to completion fluid. POOH. Check for flow prior to POOH. Keep hole full while POOH.

14. RIH w/ 13" hole opener and **open 9-7/8" hole to 13" from shoe of 7" casing to TD or PBTD.** Do not use LCM while opening hole. If lost circulation occurs while opening hole use clean formation water as drilling fluid and open hole blind. Periodically pump viscous polymer sweeps. Circulate clean for liner. POOH. Check for flow prior to POOH. Keep hole full while POOH.

15. MU & RIH **5-1/2", 20#, N80 BT&C** liner equipped with circulating shoe and 2 3/8" tubing stinger as follows:

    i. **5-1/2", 20#, N80, BT&C**
    ii. **FP = 2"x0.080"x20Rx6"C**
    iii. **SP = 2"x0.080"x6Rx6"C**
    iv. Exact length of liner will depend on final shoe depth and PBTD.
    v. Do not place the first liner collar less than 5' below casing shoe.
    vi. Leave at least 10' of blank on top below the SSA.

16. Run 2-3/8" tubing stinger and gravel pack tools. RIH on drill pipe to setting depth. Set liner on bottom.

17. Dump and clean pits. Fill pits with clean formation water. Mix 3% KCL into formation water.

    - Note: if encountering hole stability or flow issues, higher density KCL/brine may be

necessary.

18. Gravel pack liner until full pack is achieved (pressure indication on gravel pack machine). Back scuttle excess gravel. **(if less than 75% pack achieved, call drilling engineer to discuss) Use 6X9 sized gravel pack sand.** POOH and lay down drill string, gravel pack tools, and tubing stinger. Check for flow prior to POOH. Keep hole full while POOH. Clean pits.

- **Note: Sift gravel pack to ensure that it falls within the specifications of 6x9 gravel. If gravel is out of specification, call Drilling Engineer before proceeding.**

19. **RIH with 15-30 joint kill string before RDMO.**

20. N/D BOPE. Secure well. RDMO.

2

Vaquero Energy Contact List:

Vaquero Office - 15545 Hermosa Rd., Bksfd CA 93307, Phone 363-7240, Fax: 661-366-2959
Mark Wilson – (661) 979-2008
Seth Hunter – (805) 448-1475
Matt Smith – (661) 809-8699
Wyatt Shipley – (661)444-0888

Vaquero Energy Report Distribution:

Kenneth H. Hunter III – khunter@vaqueroenergy.com
Seth Hunter – shunter@vaqueroenergy.com
Matt Smith – msmith@vaqueroenergy.com
Wyatt Shipley – wshipley@vaqueroenergy.com
Chuck Dobie – cdobie@vaqueroenergy.com
Mark Wilson – mwilson@vaqueroenergy.com
Joe Nahama – jnahama@vaqueroenergy.com
Hector Gonzalez – hgonzalez@vaqueroenergy.com
Kumbe Sadler – ksadler@vaqueroenergy.com
Jack Cook – jcook4@bak.rr.com
Nicole Pierce – npierce@vaqueroenergy.com
Stephen Cunningham – scunningham@vaqueroenergy.com

Emergency Contact List:
Matt Smith (661) 809-8699
Wyatt Shipley (661) 444-0888
Mark Wilson (661) 979-2008
Seth Hunter (805) 448-1475
DOGGR – District 3 Contact: (805) 937-7246
Medical Emergencies – 911
Fire Emergencies – 911

Vendor's List

Service	Vendor	Contact	Phone Number
Drilling Rig	Barbour 77	Dennis McGru	805-207-6220
Mud	Geo Drilling Fluids	Travis Adams	661-203-3189
OH Logging	Weatherford	Dispatch	661-746-0429
Bits	San Joaquin	Jerry Mejia	661-203-3060
Liner	BPS	Richard Mangan	661-978-2714
Mud Loggers	NA	No Mud Loggers	
Wellhead	Cameron		
Cementing	Baker Hughes	Dispatch	661-336-3111
Location	GPS	Tim Edwards	661-805-9029
Conductor	Sturgeon and Sons	Todd Flynn	661-487-8043
Float Equipment	West Coast	Mike Hazen	661-325-0166
Casing Tongs	West Coast	Mike Hazen	661-325-0166
Solids Control	Brandt		
Vacuum Trucks	Rocking CJ	Casey Johnson	805-448-8237
Trailer Rentals	BNL Casing Tongs		
Trash Service	Dave Bilyeu	Dave	661-588-8059